

Report of the

44th NATIONAL CONFERENCE ON WEIGHTS AND MEASURES 1959



U.S. DEPARTMENT OF COMMERCE
NATIONAL BUREAU OF STANDARDS
MISCELLANEOUS PUBLICATION 228

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Report of the 44th National Conference on Weights and Measures 1959

*Sponsored by the National Bureau of Standards
Attended by Officials From the Various
States, Counties, and Cities, and
Representatives From U.S. Government,
Industry, and Consumer Organizations.
Washington, D.C., June 8, 9, 10, 11, 12, 1959*



*United States Department of Commerce
Frederick H. Mueller, Secretary*

*National Bureau of Standards
A. V. Astin, Director*

National Bureau of Standards Miscellaneous Publication 228

Issued December 18, 1959



Official photograph of delegates and guests attending the Forty-fourth National Conference on Weights and Measures, assembled on the grounds of the headquarters hotel

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OFFICERS AND COMMITTEES

OFFICERS

(As elected by the Forty-third National Conference to serve during the
Forty-fourth National Conference)

President: A. V. ASTIN, Director, National Bureau of Standards.
Secretary: W. S. BUSSEY, Chief, Office of Weights and Measures, } *Ex officio*
National Bureau of Standards.
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Vice Chairmen:
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Treasurer: C. C. MORGAN, City Sealer of Weights and Measures, Gary, Indiana.
Chaplain: J. H. MEEK, Director, Division of Markets, Department of Agricul-
ture and Immigration, State of Virginia.

(As elected by the Forty-fourth National Conference for the ensuing year)

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Secretary: W. S. BUSSEY, Chief, Office of Weights and Measures, } *Ex officio*
National Bureau of Standards.
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H. N. DUFF, Supervisor, Weights and Measures Section, Department of
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J. I. MOORE, Field Supervisor, Weights and Measures Division, Department
of Agriculture, State of North Carolina.
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Chaplain: RALPH MAGOFFIN, Director, Bureau of Inspection, Department of
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(As elected by the Forty-fourth National Conference)

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J. F. MADDEN, of New York.
M. L. RICE, of Richmond, Virginia.
H. D. ROBINSON, of Maine.
A. D. ROSE, of Kern County, California.
J. D. WALTON, of Dallas, Texas.

STANDING COMMITTEES

(As constituted at the conclusion of the Forty-fourth National Conference, the personnel and organization of each of the standing committees of the Conference are as listed. As reported, the membership of each committee reflects the appointments made by the President of the Conference to fill vacancies that have occurred from expiration of term, and the elections by the several committees of chairmen for the ensuing year. The remaining term of office for each committee member, in years, is shown by the figure in parentheses following each entry.)

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R. W. SEARLES, of Medina County, Ohio. (4)
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IN CHARGE OF REGISTRATIONS

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PRESS REPRESENTATIVES

P. E. WALSH, J. F. REILLY.

*W. S. BUSSEY, Secretary of the Conference, is *ex officio* nonvoting Secretary to each committee.

COMMITTEE MEETINGS, MONDAY, JUNE 8, 1959

Monday was set aside for meetings, both open and executive, of the Conference committees. Announcements of the meetings on Monday were carried in all invitations, all pre-Conference publicity, and in the tentative and printed programs.

A large number of delegates took advantage of the committee meetings, and, as a result, attendance and participation were exceptionally good.

The Conference committees that met on Monday were the Executive Committee, Committee on Laws and Regulations, Committee on Specifications and Tolerances, Committee on Education, Special Flour Committee, and Special Committee on Trading in Grains by Weight.

REPORT OF THE FORTY-FOURTH NATIONAL CONFERENCE ON WEIGHTS AND MEASURES ¹

FIRST SESSION—MORNING OF TUESDAY, JUNE 9, 1959

(C. M. FULLER, CHAIRMAN, PRESIDING)

The invocation was delivered and the memorial service for departed members was conducted by the Conference Chaplain, Mr. J. H. Meek, Director, Division of Markets, State of Virginia.

ADDRESS BY HON. LEWIS L. STRAUSS, SECRETARY OF COMMERCE

It is a great pleasure to be here today and to extend to you the greetings of the Department of Commerce. I do not feel a complete stranger in addressing you, since I had the pleasure, just 3 months ago, of presenting a set of measurement standards to the State of Alaska when she joined the Nation's measurement family. It now appears that a similar ceremony will be held in the near future for our newest member, the State of Hawaii. My interest in the subject which concerns you might be attested by the fact that when I took the oath of office on November 13th, I had asked that the Bible be opened to LEVITICUS 19:36: "Just balances, just weights, a just ephah, and a just hin, shall ye have: I am the Lord your God, which brought you out of the land of Egypt."

The National Conference on Weights and Measures will soon be approaching its fiftieth milestone in its distinguished and productive history. Measured against the long span of centuries in which weights and measures have played an important role in men's lives, your organization might appear to be only a recent arrival on the scene. But when we consider the great strides which have been made in those 44 years in the direction of an equitable system of honest standards in commerce and trade, it is surprising that so much could have been accomplished in such a brief period of time.

Quite apart from the substance of the job you are doing, there is another aspect of the National Conference on Weights and Measures which I believe deserves attention. There is an ideal type of relationship between the States and the Federal Government to which I am sure we would all subscribe. This ideal relationship would involve certain distinct responsibilities, cooperation, discussion, and mutual contributions, all directed toward serving the people. I believe that the National Conference is as close to that ideal as any other organization in the country.

State, local, and municipal officials are charged with responsibility for regulating and controlling commercial transactions involving quantity. The Federal Government, through the National Bureau of Standards, provides reference standards, calibration services, and technical advice.

¹ With the exception of formal papers and committee reports, the record of the 44th National Conference on Weights and Measures has been rearranged, consolidated, condensed, and, in some cases, comments have been eliminated wherever necessary to reduce it to essentials for future reference.

Many of the problems of local enforcement officials fall into the categories of legislation, administration, and cooperation among officials and representatives of commerce and industry. There are many other problems, however, which could be solved by greater research activities. Here, the measurement programs of the National Bureau of Standards can make significant contributions to the important job you are doing in your States. The Department of Commerce in recent years has consistently strengthened the program of the National Bureau of Standards. This is not only a recognition of the excellent work of the Bureau's scientific staff, but also an acknowledgment of the pressing demands for the Bureau's services by science, industry, and such groups as yours.

Some of the Bureau's research programs have obvious applications to your problems. For example, there is a current effort in the field of metallurgy to develop a stainless steel with some rather unique properties. Among other characteristics, it must have a certain hardness, machine workability, corrosion-resistance, nonmagnetic properties, weldability at low temperatures. Such a stainless steel would be utilized in the manufacture of State reference standards of mass.

Other research projects might appear to be of interest only in the highly sophisticated and refined applications of scientific laboratories. Here I am referring to research on atomic standards of length. The accuracies which are possible with this technique are far greater than those currently required in the operations with which you are most concerned. However, who is there among us to say that we have already reached the ultimate in accuracies and tolerances for the commercial exchange of goods? Ours is a dynamic technology. Progress in one area inevitably has ramifications for other areas.

The National Bureau of Standards scientific research programs provide the broad base for its technological competence to serve as advisers to you in the specialized problems of weights and measures administration. To the extent that this research effort is strong and vibrant, you in the National Conference on Weights and Measures will derive the benefits of drawing upon a high level of scientific achievement.

As your activities become more complex and refined in the future, and this is surely the direction of things, the Bureau will thus be in a position to assist you in this transition. To mention just one area, it does not require great foresight or imagination to see the time coming when electronic equipment plays a greater part in your work. This is a trend which is to be accepted, and welcomed, for the greater services which you can offer to the public. It is also, however, a step which requires much preparation and planning. I am certain that this challenging development will come about in the same spirit as in your past relationships.

I turn now to a subject which is of major interest to all—the business situation.

A year has passed since the recession of 1957–58 hit bottom. We have had a broad and sustained recovery which is continuing at the present time. Both output and purchasing power have advanced to new highs, with the current quarter giving strong evidence of being another record breaker.

By the end of this year's first quarter, economic activity was above the 1957 peak from which the downturn started. It is too early to

calculate the value of output in the second quarter, but the annual rate of gross national product will be substantially above the \$467 billion figure for the first 3 months of this year.

When measured in dollars of constant purchasing power—to remove the effect of price changes—real gross national product showed an advance of about 8 percent in the first year of recovery. This is substantially the same increase as occurred in comparable periods after the low points were reached in 1949 and 1954.

Recovery has been general, although a few lines of business have been lagging. Merchandise exports continue as a weak spot in the picture. On the other hand, as domestic business activity forged ahead, the rising demand for both industrial materials and consumer goods has been reflected in a steady increase in our merchandise imports since the middle of last year. Hence, our balance of payments has worsened to a degree.

A most encouraging sign is the evidence that our businessmen are once again raising their sights on their programs for new capital investment. A few months ago the Department of Commerce announced that American business was scheduling a moderate increase in capital investment from 1958 to 1959. Since that time sales and production have reached new high ground. With earnings and sales prospects favorable, businessmen have stepped up their orders for new equipment and have been placing an increased volume of contracts for new plant construction. Thus, there is every indication that the modest recovery in investment that began late last year will be extended and augmented as the year progresses.

The improvement in plant and equipment investment is most marked in manufacturing, which was in the forefront of the 1957–58 decline. The railroads have planned a sharp recovery in equipment purchases from their recession low points, and the large jet aircraft procurement of the airlines is expected to produce a rising trend of deliveries throughout this year. The high rate of new home construction has spurred increased spending on new shopping centers, and the Government's highway construction program and the continued high rate of overall construction activity have been responsible for a sizable pickup on purchases of new equipment by construction contractors.

Business has decided to invest more in 1959 because for many months sales have been trending upward, and high consumer purchasing power suggests that demand will continue to rise.

Manufacturing and trade sales are now considerably above their levels of this time last year, and a steady process of inventory rebuilding has been evident in 1959. Yet the manufacturing and trade inventory total at the end of April—when book values were estimated at \$88 billion—was about the same as a year ago. The overall stock-sales ratio for trade and manufacturing combined was in April 1.4, as against 1.7 in April 1958.

The impetus to buying has come primarily from a high rate of disposable personal income, that is, personal income after taxes. At an annual rate of \$321 billion in the first quarter of 1959, disposable income showed a rise of \$5 billion from the previous quarter, and \$15 billion from the first quarter of 1958. We may expect another rise in this measure of consumer purchasing power in the current quarter.

Personal consumption expenditures have risen with the advance in income. More consumer credit is being used to finance the recent step-up in auto buying, a segment no longer in the lagging class. Consumer purchases of other durable goods are also improved; for example, the high rate of residential construction has contributed to the rise in demand for major household goods. The larger dollar expenditures for food represent a rise in real consumption, since prices have not increased.

Some of you here in this room were present at the 15th Conference on Weights and Measures, in 1922. At that time, Secretary of Commerce Herbert Hoover, fulfilling the same pleasant role that I fill today, said to the Conference: "If we would advance the welfare of our country, if we would perfect the processes of business and commerce, it must be by unity of action on the part of great numbers of men. It is only by organization, conference, and the establishment of standards and methods that these things may be brought about."

It is this spirit of cooperation which characterizes our mutual efforts. We here in this Conference have an opportunity to demonstrate that a free political system and a free economic system offer the greatest good for all men. Let us resolve to set an example for all the world.

PRESENTATION OF HONOR AWARDS

Dr. Astin presented "Honor Awards" to 36 members of the Conference who, by attending the 43d Conference in 1958, reached one of the four attendance categories for which recognition is made—that is, attendance at 10, 15, 20, and 25 meetings.

HONOR AWARD RECIPIENTS

25-Year Certificates

C. M. Fuller, E. Kent Lawrence.

20-Year Certificates

C. D. Baucom, H. S. Bean, R. M. Bodenweiser, H. E. Crawford, G. H. Leithauser, J. P. McBride, J. H. Meek.

15-Year Certificates

Nalls Berryman, Leonard DeRienzo, J. M. Dietz, E. R. Eyler, E. R. Fisher, L. L. Kennedy, J. P. Leonard, Alfred Lirio, William Miller.

10-year Certificates

K. C. Allen, W. A. Baerwolf,* E. E. Dawson, P. R. Fishburn, R. M. Holmes, E. D. Hubble, M. W. Jensen, Nathan Kalechman, W. A. Kerlin, J. I. Moore, C. F. Rosica, M. J. Santimauro, J. J. Seres, W. E. Sheehy, Jr., J. F. Sullivan, J. Fred True, C. J. Wills, Jr., Mrs. C. G. Woodland.

*Deceased.

ADDRESS OF CONFERENCE CHAIRMAN

By C. M. FULLER, *Conference Chairman, County Sealer of Weights and Measures, Los Angeles County, California*

Looking over this great assembly of men and women, dedicated to the cause of honest weights and measures, I am reminded of another meeting, similar in character but smaller in numbers. This was the 13th National Conference, held in 1920. While there were not so many in attendance, there was the same deep interest and enthusiasm that exists today in being part of an organization that affects the welfare of all people throughout the Nation. It made a deep impression on a young man from California who was there for the first time. He decided right then that this would be his lifetime career.

I have never had occasion to regret that decision.

As a preface to this somewhat informal talk, I would like to share with you recollections about two outstanding men in our work.

A young delegate at this same 1920 Conference was Ralph W. Smith, Chief Inspector of Weights and Measures for the State of Wisconsin. He took an active part in discussing specifications and tolerances for liquid-measuring devices which were studied and adopted for the first time at that meeting. Later on that year, Mr. Smith resigned from his State job to join the staff at the National Bureau of Standards. During the years that followed he continued to work on specifications and tolerances, and wrote a number of handbooks that are held in high regard as standard texts on weights and measures subjects. He is here today as a valued consultant to the Bureau.

A new arrival at the 26th National Conference in 1936 was W. S. Bussey, Chief, Division of Weights and Measures for the State of Texas, who came with a bodyguard of four comely young ladies, one of whom, I hasten to add, was his wife. He displayed real showmanship when, on behalf of the Governor of Texas, he presented Doctor Briggs, Director of the National Bureau of Standards, and President of the Conference, with a commission as honorary Texas Ranger and, as badge of office, a ranger's "ten-gallon" hat.

Not satisfied with that, the following year he brought back three of his coworkers, all big Texans, wearing enormous Mexican straw hats with tassels around the brims, and loud serapes thrown nonchalantly over their shoulders to complete the outfits. From that time on, everybody knew Bill Bussey.

As we look back on it, inspection and enforcement was comparatively simple in those days. Liquefied petroleum gas, farm milk tanks, prepackaging scales, electronics, and other developments had not yet come into being to complicate the work. The first book of specifications and tolerances was a small manual. But remember this—those pioneers had to start from scratch. Every item was the result of painstaking study and consultation, for they could not afford to be wrong. Those early regulations represented days and nights of constant endeavor. And the result? They were basic and they were right. They provided the foundation on which to build the standards and rules of future years.

I would like to leave a few thoughts with you this morning. Having served on the Committee on Specifications and Tolerances

for 25 years, from 1923 to 1948, and on the Advisory Committee to the Director of the National Bureau of Standards for the last 5 years, I have had an unusual opportunity to make a study of people and things. I have been able to arrive at some well-considered conclusions as a result of my own observations.

Now, it is not surprising that some delegates on the occasion of their first participation in National Conferences are liable to make mistakes. It is easy to form opinions that are in the nature of snap judgments. We have all been guilty of this at one time or another. Such opinions can be both dangerous and embarrassing because, when more complete information is obtained, the speaker will realize that the first opinion, which he so vigorously set forth or defended, was entirely wrong.

Take plenty of time to study all sides of a question before making a decision.

From the first National Conference to this one, the prime objective has been uniformity—uniformity throughout all the States and local jurisdictions with respect to laws, regulations, specifications and tolerances, methods of test, and administration.

This requires the cooperation of many—weights and measures officials, manufacturers of weighing and measuring equipment, the users of this equipment, in fact industry in general. By meeting together and discussing mutual problems as we are doing here, conclusions can be attained that are fair and equitable to all.

In addition to cooperation, there must be a spirit of tolerance and an open mind that is willing to listen to the other fellow. There must be some merit to his proposition for he is not lacking in intelligence. Do not be so bigoted that you refuse, either inwardly or outwardly, to consider his proposition.

Take the codes of specifications and tolerances, for example. There was a time when a manufacturer of weighing or measuring equipment was compelled to go to the expense of making numerous small changes to comply with the different requirements of officials in each of the several States. A merchant might find that, in moving from one State to another, the scale that had been sealed correct for use in the first location would now be turned down. What a ridiculous situation that was.

That has now been corrected by a uniform code that has been officially adopted in the majority of States. I hope that the time is not far away when it will be universal.

Suppose you do conceive some new idea that is a deviation or change from the code. You are enthusiastic. It becomes a pet project. All right! Don't take arbitrary action and proceed to put it into effect, right now, in your jurisdiction, thus creating a break in uniformity. It cannot be that important.

Go about it the right way. Take it up with the delegated Conference committee. They will set the time for a hearing. Of course there may be some arguments and debate, for we do not all look at things alike. But a majority opinion will finally emerge. This will be submitted to the entire Conference for a final decision, and that decision should prevail.

There is strength in unity. Individual action away from uniformity can only tend to weaken our entire structure. As members of this Conference, we should be willing to abide by majority rule.

How fortunate we are that back in 1905 Dr. Stratton, Director of the Bureau, and Louis Fischer, Chief of the Weights and Measures Division, decided to invite a group of State officials to meet at the National Bureau of Standards. There were only 11 present at that meeting, but the purpose then, as it is today, was to bring about uniformity and to effect a close cooperation between State and local jurisdictions and the National Bureau of Standards.

It is important to remember this. There has never been any thought or effort on the part of the National Bureau to dominate or dictate to the Conference.

The Advisory Committee was created in 1954 to aid the Director by informing him regarding conditions in the field, and by recommending ways and means for improving the services of the Bureau to weights and measures.

Director Astin, Associate Director McPherson, all members of their staffs and the Office of Weights and Measures have been most cooperative and receptive to our suggestions. It has been a real pleasure to work with them. Much good has been and will continue to be accomplished by this cordial spirit of teamwork.

The future looks bright for weights and measures. There is a growing realization on the part of the public that this is an essential service that must be maintained at a high level. Public officials are more ready than ever before to authorize budgets for necessary men and equipment, for they know that the savings accomplished are real dividends to the taxpayers. Constructive publicity like that of National Weights and Measures Week is beginning to pay off.

So let's continue to keep up the good work, with a heart full of thankfulness that we can be part of a great necessary service to our fellow men.

ADDRESS OF THE CONFERENCE PRESIDENT AND APPOINTMENTS TO STANDING COMMITTEES

BY A. V. ASTIN, *Director, National Bureau of Standards*

It is a real pleasure for me to be here again with you in my eighth successive year in this capacity. I still have a way to go before I can qualify for one of the Honor Award Certificates.

I would like, as has been my custom on prior occasions in this capacity, to report to you briefly on the status of activities of the National Bureau of Standards, and also to make certain appointments which it is my responsibility to make under the new Charter of the National Conference.

This year, five appointments to standing committees are to be made. Three of these are for a full term of 5 years and two are to fill unexpired terms and are for 4 years' duration.

To the Committee on Education, to succeed John E. Mahoney of Maryland, whose term is expiring, I appoint Mr. J. E. Bowen of Newton, Massachusetts, for a full term of 5 years.

To the Committee on Laws and Regulations, to succeed Mr. F. M. Greene of Connecticut, whose term is expiring, I appoint Mr. H. M. Turrell of Pennsylvania for a full term of 5 years.

Because of an approaching change in employment by Mr. E. L. Randall of Nevada, he has found it necessary to resign from this committee after only 1 year's service. To fill this vacancy I appoint

Mr. J. G. Gustafson of Minneapolis, Minnesota, to a term of 4 years.

To the Committee on Specifications and Tolerances, and to succeed Mr. J. E. Brenton of California, whose term is expiring, I appoint Mr. A. H. Dittrich of New Hampshire for a full 5-year term. As there is to be a change in the administrative status of the Ohio Division of Weights and Measures, Mr. V. D. Campbell has considered it necessary to resign his position on this committee. To fill the vacancy created by Mr. Campbell's resignation, I appoint Mr. R. W. Searles of Medina County, Ohio, to a term of 4 years.

There are two vacancies occurring on the Advisory Committee to the National Bureau of Standards on Weights and Measures this year—one by the expiration of the term of Mr. William A. Scheurer, President of the Exact Weight Scale Company, Columbus, Ohio, and the other by the expiration of the term of our esteemed Chairman, Mr. Fuller. Mr. Fuller has served in this capacity for a full 5 years, and it has been a great pleasure to me to have had the opportunity of working with him. I value this association very, very highly and I regret to see his term coming to an end.

Mr. Fuller, as Conference Chairman, has made excellent recommendations to fill the vacancies of the two retiring members of the Weights and Measures Advisory Committee and I am glad to accept his recommendation. First, Mr. James E. Moss, Director, Division of Transportation, American Petroleum Institute, Washington, D.C. Next, Mr. E. C. Westwood, City Sealer of Weights and Measures, Salt Lake City, Utah. These two gentlemen will be appointed to 3-year terms on the Weights and Measures Advisory Committee to the National Bureau of Standards.

All five of the retiring members of the standing committees and the two retiring members of the Advisory Committee have performed outstanding service to the National Conference on Weights and Measures, to weights and measures nationally, and to the National Bureau of Standards.

I am sure that this Conference will wish to express its appreciation to those outgoing committee members by a standing vote of thanks at this time.

I would now like to proceed to my report on the status of activities at the National Bureau of Standards.

We have made, during the past year, substantial progress in a number of areas, particularly in developing new standards, measurement techniques, and in accurate determination on the properties of material. As a part of the improvement of our calibration services program to the nation, we formally dedicated during the past year an Electronic Calibration Center at Boulder, Colorado. This Center was set up at the instigation of the Department of Defense, largely to provide a means whereby it could refer its testing and calibration instruments to the national standards on a systematic schedule, and thus bring about a greater degree of reliability and uniformity in the complex electronic equipment which is used in so many of our modern weapons systems. We are very pleased that we are now in a position to begin fulfilling some of the more essential needs in this area.

However, the opening of the Center is just a beginning in this area; as a further means of strengthening our calibration services to the Defense Department, we have set up a special committee in cooperation with the Air Force under the chairmanship of Dr. McPherson

to work with defense contractors throughout the country to attempt to determine what additional calibration and measurement services are needed to improve the efficiency and reliability of equipment used in many of our present weapons systems and other military materiel items.

In the general field of standards a number of improvements have been made. We have devised improved techniques for providing calibration services on vibration equipment, and have provided improved calibration services for measuring both very high and very low pressures, and a host of other types of activities.

In an area of somewhat direct concern to you people, we have improved substantially our ability to provide precise length calibration. Acting under the impetus several years ago of an urgent request from the machine tool industry, we set about to provide calibration services which would be accurate to one ten-millionth of an inch. This required a dual development, both on measurement techniques and on gage block materials, which would be stable to this limit of accuracy, and we are beginning to see the end of this activity. Equipment to make measurements with this accuracy has been designed and is in the course of construction and will be ready for operation this fall.

In addition, we have succeeded through metallurgical research in developing new gage block materials, some of which have shown changes of only about two ten-millionths of an inch in a year's time. This is beginning to get in the region of stability which we must have to meet this modern industrial requirement.

Also, there has been substantial progress in terms of our long range objective of redefining our national and international standard of length, namely, the international meter. As you know, our national standards in the customary units of yards, inches, pounds, and ounces are based on metric standards, and our national metric standards, the meter and kilogram, are merely prototypes of international standards which are kept in Paris.

Since 1889, the meter has been designated as the distance between two particular lines on the platinum iridium bar which is maintained in the vaults of the International Bureau of Weights and Measures in Paris. The International Committee of Weights and Measures, which is the guiding committee for the International Bureau of Weights and Measures, agreed at its meeting last fall to recommend to the General Conference of Weights and Measures, which convenes in the fall of 1960, that the old definition of the meter be abrogated and we define the meter in terms of a specific number of wave lengths of a particular color of light emitted by the atom, krypton 86. This decision was agreed to unanimously by the members of the International Committee last fall and will be voted on in 1960 by the formally designated representatives of the nations which adhere to the Treaty of the Meter. It is anticipated that that recommendation will be approved and that we will then have a completely new definition of the meter, a definition based on a neutral constant, and will provide the standard which can be made accessible anywhere in the world and which will be indestructible.

In another somewhat related area we made also considerable progress during the past year in reaching an agreement to resolve the small but troublesome differences in the various values of the yard

and the pound. As I mentioned earlier, our yard and pound are based on the meter and kilogram by ratios established by the Office of Standard Weights and Measures, the predecessor agency of the National Bureau of Standards, in 1893 and 1894. The ratios, however, which we use are different from the ratios the Canadians use, who also base their yard and pound on metric units, and different still from the values for the yard and pound in England, who base their yard and pound on an imperial yard and an imperial pound.

These three countries, together with representatives from other English-speaking and inch-using countries, namely, Australia and New Zealand and South Africa, agreed on a single ratio relating the yard to the meter and a single ratio relating the pound to the kilogram. And necessary agreed-upon ratios will be used in our calibration services beginning this coming July 1.

The value of the yard under this agreement is defined as equal to 0.9144 meter, which gives an inch exactly equal to 2.54 centimeters. The value for the pound is defined as equal to 0.45359237 kilogram. These changes will have no effect at all upon the sort of work that you gentlemen are doing. That is, the changes involved here are a shortening of our standard yard by about two parts in a million. This will mean that numbers used to express measurement in terms of yards will be larger by about two parts in a million. The change in the pound is decreasing its value by about one part in ten million. This will cause an increase in the numbers used to express weights in terms of pounds by about one part in ten million.

Those small differences are beyond the accuracy with which we are able to determine the standards which we certify to the State governments. So the small change will have no effect at all on your own activities. It will, however, have a very important effect in a number of precise metrological determinations, the sort of things that are encountered in the precision instrument industry involved in making highly accurate instruments and devices which must mesh together on exceedingly close tolerance. The fact that our inch has been different from the British inch has led to a number of difficulties and confusion in the interchangeability of instruments between these two countries. The resolution of these differences by these small adjustments will assure greater interchangeability and at the same time greater cooperation among the nations which use the inch and the pound.

I would like now to talk about the area of activity in the National Bureau of Standards of more direct concern to the Weights and Measures Conference, namely, changes in the program of our Office of Weights and Measures. In order that our weights and measures activity can carry out some of its expanding activities, we have just recently completed relocation of the Office in another building at the Bureau and in substantially larger and much more useful quarters.

We will in these new quarters give particular attention to a weights and measures library and to a new training facility. It is our plan to equip the training laboratory and then to offer to the States, counties, and cities concentrated courses and instructions for supervisory personnel. We hope to design such courses so as to cover the various technical aspects of weights and measures supervision and, through the supervisors and training officers who will avail themselves of these courses, to extend greatly the effectiveness of our contribution in this

important area. This training program will be planned to provide maximum individual instruction, and to achieve this we will plan normally to limit the classes to 12 or less. An announcement of the dates and contents of the courses will be made just as soon as our plans are completed.

I mentioned that an enlarged weights and measures library is one of the important things we are planning in this new location of the Office of Weights and Measures. This is a project which has been shaping up under the direction of Ralph Smith over the past year. He is developing first a collection of weights and measures documents, books and manuscripts of historical importance to students and researchers in this special area. Some of the material dates back to the early 1800's. Supplementing the archival collection is a reference collection consisting of some duplicates of historical items and in addition many items of current weights and measures interest and usefulness but not of archival importance. Together these collections already comprise many hundred items. There is a possibility of ultimately consolidating these collections with the weights and measures volumes of our main library.

In addition to providing better quarters for our Office of Weights and Measures, we have also strengthened its staff by two important additions. The first of these became effective about 3 months ago when Dr. Lewis V. Judson was transferred from the Length Section to the Office of Weights and Measures. He had been a member of the Length Section of the Bureau for approximately 41 years. All during this time he has shown an active interest in the weights and measures work of the States and has had an active part in instructing State officials in their calibration work. He has visited many State offices during the past few years to study the needs of the States in connection with our consideration of new standards of weights and measures.

With his knowledge of both precision and practical measurement, not only in this country but abroad, we are anticipating that he will do much to strengthen the scientific aspects of the Office of Weights and Measures in many practical ways. His duties will be quite varied, and he will be concerned with preparation of publications, consultations, classroom instruction, and correspondence. I hope that, if you have problems in which Dr. Judson's special talents can be of help to you, you will certainly make known your requests or wants to us.

The second addition to the Office of Weights and Measures is a very recent one, made just last week. Ronald Steiger, a mechanical engineering graduate of the University of Louisville, who is also seeking a master's degree in business administration at American University, was transferred from our Mechanics Division to the Office of Weights and Measures. Mr. Steiger is a young man with a great potential, whom all of you will want to get to know. He will be working throughout the area of weights and measures supervision and specifically in the design of testing equipment and procedures and in the technical training program.

Also in this area we are proceeding on a number of fronts in terms of our study of possible new standards for the States. Mr. Strauss, in his talk, referred to the work of our Metallurgy Division aimed at

improved materials for possible new State standards. It appears that if our study shows a justifiable need for new standards to be furnished to the States, then we will very likely use some of our metallurgical research in order to have improved materials for the fabrication of these standards. For example, it appears much more likely that stainless steel standard weights would be much more serviceable than the brass weights which are now employed.

I also want, before concluding the report on the activities of the Office of Weights and Measures, to call your attention to the fact that we have released within the last few months a new Handbook 67 on weights and measures activities. This deals with problems involving packaged commodities and it is one of a series of handbooks which we hope will help make your work easier and more effective.

All of the previous speakers have pointed to the desirability of cooperation in terms of achieving our mutual goals. Here of course we look to you people who represent the weights and measures community in the States and local areas as one of our most effective means of bringing to public beneficial fruition the important activities of the National Bureau of Standards. To the extent that our liaison and cooperation with you is effective, our own efforts will really justify then the existence of a Federal establishment set up to provide assistance to the public.

We sincerely solicit your suggestions and recommendations as to how we can make our work more effective. Of course, we do have the assistance of the Weights and Measures Advisory Committee, and from that committee we get a number of useful and detailed recommendations. But this is a small committee. It works hard, but it cannot possibly encompass all of your requests or desires. Therefore, I extend to all of you an invitation at any time, where there are problems where you think the National Bureau of Standards might be helpful, to make your requests known to us. By thus working together I am sure that we can all do a much better job at achieving our common goal of having an honest, efficient weights and measures administration.

ADDRESS

By HON. GENEVIEVE BLATT, *Secretary, Department of Internal Affairs, Commonwealth of Pennsylvania*

If an invitation to come back and speak again is the highest compliment which can be paid to a speaker—and I feel sure it is—then I have been indeed greatly honored by the National Conference on Weights and Measures. I have always remembered how much I enjoyed my first visit with you in 1956, and so I was tremendously pleased to receive the invitation to join you again today, and to discuss with you some of the problems which all of us have been facing in the enforcement of standard weights and measures.

When I was here before, I had been in charge of the enforcement of standard weights and measures in Pennsylvania for just about 1 year, and I told you about some of the difficulties I had encountered and the progress I felt had been made. As I look back now, I realize how much of a novice I was then and how much more I have still to learn about how to do this work most effectively. I am gratified, however, by the progress which has been made—progress in which the National Bureau has played an important part, by the way—and

I welcome this opportunity to discuss our current situation with you.

Our chief problem in Pennsylvania, and I venture to say a considerable problem anywhere, is a lack of funds, and a consequent lack of modern equipment and staff to carry out a really effective enforcement program.

I am a frugal sort of person, especially when public money is concerned, and I do not like to spend a dollar more than is necessary to get the job done. Still I know that, in weights and measures enforcement as in anything else, we cannot get very much done for nothing.

Our legislative leaders in Pennsylvania have always indicated considerable interest in having an effective enforcement program carried out, but the rising costs of State government and the consequent need for more State taxes, coupled with partisan differences about the kind of taxes which should be levied, have made them unable or unwilling to increase our very modest appropriation. We are making every dollar stretch just as far as it will go, and I am proud to say that we are actually rendering more service per tax dollar than we ever have before. Still we do need more money to fulfill our obligations in these times of modern merchandising methods and techniques. We need more inspectors and more equipment. And we are trying hard to get the necessary funds. Time alone will tell how successful we are in this endeavor.

In attempting to persuade the members of the legislature of our need for funds to carry out standard weights and measures enforcement, and also in attempting to educate the public regarding the importance of this function of the State government and the necessity for their cooperation with our inspectors, we have tried to place as much emphasis as possible on our educational program.

First of all, we have tried to educate our own men, both the inspectors we hire in the State government and the local inspectors with whom we cooperate throughout the State. We have had regular schools for instruction in which the National Bureau has been of immense help. We have sent our State inspectors out to instruct local inspectors and to give them every service possible. As a result, we feel that all of the inspectors—both State and local—are doing a better job because of this inservice training, and are much better able to explain to anyone who wants to know just how important weights and measures enforcement is and how such enforcement is carried out. We consider these inspectors our “frontline troops” in the job of public education, and we want them, themselves, to be as well educated as possible in the work we all have to do.

In addition, we have carried on an extensive program of educating the public in weights and measures practices and in soliciting their assistance in weights and measures enforcement. It has been our feeling that we could have thousands of volunteer helpers in our work, if the public knew what we are trying to do. So we have been trying to tell them.

All of our fieldmen, our Director, our Assistant Director, and I have made frequent radio talks about the various problems of weights and measures enforcement. In addition, we have appeared as often as we could on television programs. We have released numerous stories and articles to the newspapers. And we have spoken to hundreds of civic groups throughout the State. In short, we have

tried to tell the weights and measures story wherever we could get an opportunity to tell it.

We have found that, unlike news of an epidemic or a choice bit of scandal, news about weights and measures enforcement is slow in spreading. But it can be spread!

Particularly encouraging to us in the last year was the sizable amount of publicity attained during our observance of National Weights and Measures Week. Several weeks in advance, I directed a personal letter to every Mayor and County Commission Chairman in Pennsylvania asking that he join in a proclamation of National Weights and Measures Week in his own community. I also secured a promise from the Governor to designate this as a statewide week of observance of weights and measures problems. The publicity attendant upon these proclamations alone was considerable. In addition, we arranged for a month-long exhibit in the rotunda of the State Capitol, which featured the display of a set of standard weights and measures, pictures of our testing equipment in use, samples of our printed leaflets and brochures for distribution, and the Toledo "talking scale." We have no way to measure how many people examined the exhibit during the month it was on view, but we do know that the talking scale registered 3,198 weighings in just 1 week, and we would conservatively estimate that at least 15,000 people saw the exhibit. Included among these were the members of the legislature, who were attending sessions in the Capitol during this period. We prepared a special little brochure entitled "Weights and Measures—and You," which went "like hot cakes." We found it practically impossible to keep enough copies on hand for the people who wanted them.

One other phase of our educational program has been concerned with working with manufacturers and producers of equipment and helping them to understand not only what our requirements are but the purposes for these requirements. We have held many meetings with representatives of the various industries to discuss problems of mutual concern, and we have found them almost universally willing to cooperate when they understood what we were trying to do.

And, all the while we were trying to educate the public and the members of the legislature and the manufacturers, we have been doing our best to keep up with the new problems which arise constantly. Indeed, it has seemed that we have never solved one problem of enforcement before another has been brought to our attention. I suppose that the very speed with which new weighing and measuring devices are manufactured and put on the market would make this inevitable.

For example, many more Pennsylvanians are beginning to use oil for home heating and industrial purposes. With this increased use of fuel oil, vehicles to transport and deliver it have increased in number. So have demands for testing of fuel oil meters. When the need to expand our service in this respect became apparent, we had at our disposal but one mobile testing unit, and it was in such a deteriorated state that its use was inadvisable other than in the immediate area of the State Capitol. We felt very strongly that we ought to have several mobile testing units in operation, but there simply was not the money to buy them. We decided, therefore, to install several check stations, and we set up three in various parts of the State, and asked that meters be brought to these stations for checking. Our laws, however, do not

give us the authority to order dealers to bring their equipment into these test points, and many of them resisted making long trips for this purpose. Consequently, our checking has been substantially limited to those dealers who were complying on a voluntary basis. So now we are asking the legislature again for funds for more mobile testing units and also for authority to order dealers to bring their equipment to testing stations.

Another problem we faced was concerned with the use of one-third quart containers for milk. Milk dealers, especially those who used automatic vending machines, claimed that there was a demand for one-third quart containers, and when our Attorney General finally ruled that we could amend our regulations to permit such containers, this amendment was made. Then, of course, we began using a new standard for liquid measure, the one-third quart.

Another problem we faced had to do with the use of the word "net" on packaged items. Our requirement that the net contents be clearly stated on each package was questioned, but we took a firm stand, clarified our regulations to be perfectly sure that there could be no mistake about the requirement, and have had no further trouble in this respect.

We had another problem in connection with weight declarations on meats processed in food freezer plants for home consumption. In this case, we obtained an opinion from the Attorney General to the effect that our laws required individually wrapped cuts to be considered as packages, and, as such, to be clearly marked as to net weight.

A similar ruling was obtained in connection with the sale of wrapped meats, such as bologna, ham butts, etc., which we also considered to be packaged items requiring the net weight declaration. The same ruling was applied to packaged barbecued chicken.

Another problem we faced had to do with the use of the word "net" of you as well, is that regarding short-weight packages of flour. We have had many conferences with millers and dealers regarding this problem, and we have found them all anxious to be as cooperative as possible in our program to keep short-weight flour packages off the shelves. When we have found any such packages we have immediately stamped them "condemned" and ordered them removed from sale. From present indications, it would appear that our strict enforcement program is already bringing about the desired results, and more care is being exercised to make sure that the packages meet the standards when put on the shelves and continue to meet the standards as long as they remain on the shelves.

As I look back over my first 4 years in office, it seems to me that the biggest problem we had was to build up our staff and to train it, and the next biggest was to prescribe enforceable regulations which were both modern and understandable. In this latter connection, the most important step we took was to adopt the National Bureau of Standards Handbook 44. In so doing, we brought Pennsylvania's enforcement practices into conformity with those of most other States without relaxing our own enforcement standards to any degree. In addition, by distributing this Handbook to all of the local weights and measures enforcement officers in Pennsylvania, we have brought about a much greater degree of uniformity in practices and procedures than we ever had before.

Following our adoption of the National Bureau's Handbook in 1956, we established a new policy for checking farm milk tanks, which may be of interest to you. We required that the responsibility for the initial calibration should be assumed by the manufacturer, with a recheck to be made by an inspector from our weights and measures at a later date. This enabled the farmer to make immediate use of his tank, rather than wait until the weights and measures inspector could get around to check it. Further progress was realized the following year, when we put three panel trucks into service, each carrying special equipment for testing these tanks. At that time, we divided the State into three territories, with one of these units assigned to each, and now our men schedule their work dairy by dairy, checking all tanks serviced by each dairy before starting with the next. In this way, we have greatly expedited the checking of farm milk tanks and have also permitted our inspectors to devote some of the time which they were previously spending in this work to the other phases of weights and measures enforcement.

Considerable progress has also been made in our program for testing heavy-duty scales. We initiated a new system in 1957, wherein we again divided the State into three territories with a heavy-duty truck testing unit in each. In testing these scales, our inspectors worked county by county, assisted by the local inspectors, and remaining in each county until all of its scales had been tested. This system replaced the former method of working on a "request for services" basis, which was a time-consuming method leaving much to be desired in the way of accomplishment. In some of the counties, which we visited in this program, we found that no one could remember when these heavy-duty scales had ever been checked before. In many other counties, there had been no testing done during the past 10 years. Our Director talked about this program in considerable detail at the Indiana State Conference in March, and many of you undoubtedly heard what he had to say at that time. It has been an outstandingly successful program, and we are all very proud of it.

Thus far, I have discussed with you the problems as we see them in Pennsylvania in relation to the need for enforcement funds, the necessity for the continuing education of our own inspectors, our legislative leaders and the public in general, and certain specific enforcement questions.

Now I would like to tell you a little about what we have in mind for the future.

We have three major bills now pending before our legislature, which will be of considerable importance to our future plans.

One would authorize the licensing of public weighmasters. At present, our State laws authorize the licensing of public weighmasters only for solid fuels, principally coal, but there are many other commodities, in the weighing of which their services are required. So we are trying to have the legislation changed to make it more inclusive.

Another will authorize the registration of people engaged in the business of selling, trading-in, receiving, installing, or repairing condemned, rebuilt, or used weighing and measuring devices. We think this legislation will give us a very valuable check on persons who do this sort of work, and will prevent abuses in the future.

And the third will regulate the deliveries of light fuel oil to domestic consumers and require the furnishing of immediate receipts. This is

something for which the present law does not provide, but which is urgently needed now that so much fuel oil is being used for home heating.

Besides this legislation, we are asking for funds which we think are urgently needed to expand our enforcement program. We want to buy another heavy-duty truck for use in testing large type scales and another panel truck for use in the farm milk tank program, and three more mobile fuel oil meter-testing units. We want to establish a liquefied petroleum gas program and obtain a mobile unit for checking liquefied petroleum gas meters. Last, but far from least, we want to provide our field staff with portable scales and volumetric equipment. In addition, we want to establish a visual aids program for use in training our own inspectors and in furthering our public education program. We feel sure that our legislators agree with us that these things are necessary. Our hope now is that they will also be able to find the funds to provide them.

And now I would like to say a word about the two things I consider to be absolutely essential for any State enforcement program, two things which we have been most fortunate to have in Pennsylvania: An able and devoted staff, and the cooperation of the National Bureau of Standards.

You may recall that, when I spoke to you some years ago, I mentioned that I had almost no staff to work with when I took office in May of 1955. I said then that, although the situation had some advantageous aspects in that I could select staff members in whom I had complete confidence and "start from scratch," I had considerable worry as to whether or not I could build up a staff and train it fast enough to keep abreast of the enforcement problem.

I am glad to say now that, insofar as I have been able to do this, it has been due to the wonderful people who have joined our staff and the unfailing advice and assistance of the men in the National Bureau. I think most of you have met our Director and our Assistant Director. And some of you have met others on our staff. All of them are devoted, dedicated public servants, who have done their utmost to learn as much as they could about their jobs and to do them as well as humanly possible. I am proud of each and every one of them, and I feel that the people of Pennsylvania owe all of them a debt of thanks for their splendid service.

To the National Bureau, we can never properly express our gratitude. They have checked our equipment. They briefed our staff when we first took over enforcement responsibilities. And, ever since, they have always been at hand to help in every way they could. We are particularly grateful to them for sending their own staff members to conduct our training schools, and, if I might make any suggestion here today, it would be that such training schools be provided for every State on an annual basis. I can not think of anything which would be more helpful to State inspectors than to have an annual period of instruction, given by these outstanding national experts.

This would keep all of us up to date on new weighing and measuring devices and new enforcement problems.

I suppose it can be said that every good public servant regards the work he does for his government as of the utmost importance. The soldier, the sailor, the statistician, the tax collector, the mine

inspector, the soil conservation expert—every single one of them—can justifiably claim that his services are essential to his government, and can take great pride in the work he does.

The weights and measures inspector can and rightfully does take the same attitude.

His work is all too seldom recognized, the results of his activity very infrequently considered, but it does not take much reflection on the complexities of modern life to realize that, without standard weights and measures on which we can all rely, we would be headed for intolerable confusion.

That is why I am so proud to have something to do with standard weights and measures enforcement.

That is why I am so glad to know you people who share my concern that this work be done well.

You are important to your government.

Your work is important to every man, woman, and child in America.

Be proud of it. Talk about it. And I pray that God will give each of you the strength to give it the very best that is in you!

ANNOUNCEMENTS BY THE SECRETARY

MR. BUSSEY: I should like to report to you on some of the State legislative activities during this year. Some of you already know that the States of Washington, Missouri, and New Mexico have enacted the Model State Law on Weights and Measures. This is the first time that the State of New Mexico has had a comprehensive weights and measures law. In the cases of Washington and Missouri it was a modernization and improvement of existing statutes.

Mr. John Lewis is the new Chief of the Washington Division of Weights and Measures, which is in the Department of Agriculture. Mr. George Bay is in charge of the Missouri activity. Mr. Dallas Rierson is the Director of Agriculture in New Mexico and strongly supported the new weights and measures bill. The New Mexico law goes into effect on July 1.

Other States that have reported on weights and measures legislation this year are Connecticut, Ohio, and Vermont. Major regulations were adopted in Kentucky and California during the year. The Model Law was introduced in the legislatures of Delaware and in Arkansas. The Arkansas legislature unfortunately killed the bill, but the bill in Delaware is still pending.

**SECOND SESSION—AFTERNOON OF TUESDAY,
JUNE 9, 1959**

(E. C. WESTWOOD, Vice Chairman, Presiding)

THE SECOND ANNUAL NATIONAL WEIGHTS AND MEASURES WEEK

By J. L. O'NEILL, *State Inspector, Division of Weights and Measures,
State Board of Agriculture, State of Kansas*

The Committee on Education for the 44th National Conference is to be congratulated for its fine efforts in the nationwide participation of the second annual National Weights and Measures Week. The interest was high over the country, and I am sure most of us were surprised at the great success of the Week. This project turned out to be one of the most united projects that has ever come from the committee. Reports from the various member jurisdictions reveal that much more was accomplished than had been anticipated. Thirty-one States, the District, and Puerto Rico have reported taking part in the second annual National Weights and Measures Week.

Publicity angles were secured in many ways this year. Ideas from the first Week, celebrated last year, were elaborated on and many fine pieces of work completed by the members of this Conference. Many of you have shown that you are not amateurs in the public relations field, but are real publicity agents. Many hours of work were contributed to the effort.

The Week had a very good sendoff here in Washington with the presentation of the new State standards to our 49th State—Alaska. This was one of the best things probably that happened to trigger the Week into motion and on to a final conclusion. This year 20 Governors proclaimed the Week and gave us the lead for many stories in our Nation's newspapers. Along with this, 74 mayors, county boards, or other local governing authorities issued proclamations that brought the Week down to the grassroots and gave the officials in their immediate jurisdictions the spirit and initiative for their various programs. These proclamations probably were principally responsible for the some 400 newspaper stories, feature articles, and editorials that we saw. Some jurisdictions got complete pages of pictures and stories. Editorials are the hardest part of the newspaper to invade, but many fine editorials resulted from the second annual Week. One that I will mention came from the home county of our Chairman of the Conference, Morris Fuller. May I quote a few lines from this editorial—"This paper has found much fault with overcostly, overloaded, power-grabbing, and redtape-encased government bureaucracy. And we still do, for that is one factor which makes our taxes too high. But now and then the bright sunshine peeks through and we see a governmental department which lives up to its duties and obligations, which does not overstep its authority, which serves the public well, and all at a minimum, reasonable cost to the taxpayers. Such a unit is the department of the Sealer of Weights and Measures, Los Angeles County, which has been directed for the past 43 years since its inception by Charles Morris Fuller." This is a very fine tribute to one of our sealers and may well be the tribute to many other sealers across our land. This is just one sample of the fine articles

that have come forth in the Week's efforts. We will not attempt to quote the many other fine tributes to the weight watchers that were printed in our newspapers during National Weights and Measures Week.

In radio coverage, some 175 radio stations beamed messages during the Week to all corners of our land. Some programs were several minutes long and others were spot announcements. Some of these programs were personal appearances. Television, the high-priced means of reaching the public, also had an exceptional coverage in many of the States. Some were spot announcements and others personal appearances and public service programs dedicated to the Week. Some 70 TV stations went on the air in our behalf. It was also noted that a nationwide network picked up the Week and carried on a discussion on its morning program, which has for its audience housewives that buy the everyday things that weights and measures officials are so vitally interested in. This interesting discussion was carried on by Peter Lind Hayes and his wife on their variety show. The show originated in Florida during the Week. This program was the result of efforts of the Scale Manufacturers Association to list the Week in Chase's Trade Promotion Planning Calendar and Standard Rate and Data Services. Many other announcements were picked up and used through this means. TV time, as you know, is a high-priced item which many of you secured through your efforts. The total amount of time, estimated in dollars and cents, would be high, and this is evidence of what can be done with the effort that was put forth during the Week.

The Committee on Education distributed to the various jurisdictions some 4,000 mat emblems of the seal of National Weights and Measures Week. These were used to a great extent and probably used by jurisdictions more than any other means of announcing the Week. The cooperation by the chain and independent stores and others was 100 percent in some jurisdictions and less in other jurisdictions. Our wholehearted thanks must go forth to the many thousands of advertisers who carried the weights and measures emblems.

Public appearances numbered about 90 at our latest count, and the use of the films produced by the Bureau was high again this year. Many fine displays took place in different parts of the country, and I think this form of publicity for the Week could be stressed more next year. Many signs and window and bumper stickers appeared as a special means to advertise the Week. Howard Crawford's rubber stamp emblem was used on many pieces of correspondence over the country. This one original idea paid off and spread over the States as a means of publicizing the Week. Those mentioned are but the highlights that gave a special amount of publicity for the Week.

I am sure that you will all agree that extension of participation to many groups and weights and measures jurisdictions that did not take part is the concern and hopes of those who did such a wonderful job in the second Week promotion. It would be a miracle to have 100-percent cooperation in any united effort. This sets before us the challenge as to how many more jurisdictions, industries, and companies might, with the proper encouragement, bring into play their talent and professional guidance to this program. This pro-

gram will need all the support that it can get to keep it alive and progressing from year to year. Some of the reasons for nonparticipation in some of our jurisdictions might be the lack of personnel and time to promote some form of project or the lack of a working committee. If one will take a good look at the areas that did not carry on a program, he will find that most of those have been missing in attendance at past National Conferences and may be missing at this Conference. This may not be the case exactly, but the whole aim of this Conference is to bring about uniformity and participation in a model weights and measures program. Jurisdictions that have not had the proper educational work and that have not been successful in bringing about their programs in weights and measures are generally not in attendance. If nothing else, the Week may be the means of a little missionary work into the jurisdictions that may need a boost, and this alone will make the project well worth while. The program that this second annual Week projected cannot help but be heard in the jurisdictions that are not represented here or do not carry on the type of weights and measures program that they can be proud of. Weights and measures divisions that have up-and-coming programs have for public relations uses many stories that can be told to benefit their causes.

Some of the jurisdictions tried unsuccessfully to have proclamations issued. Many jurisdictions were in the midst of legislative sessions. Some were met with a flat "no" from newspapers because everybody seems to be asking for a "week" to publicize his work or his product. Others were reluctant to be put in a position of getting the law enforcement agency into promotional work where, if a favor is granted, one is expected in return. Most weights and measures departments are supported by tax money to enforce laws passed by the legislature. Law enforcement is their primary function. When time, effort, and supplies are turned to promotional efforts, they are, in a sense, operating out of bounds. This has been frowned upon. For instance, an Agriculture Department may have several divisions of law enforcement assigned to it. If each of these divisions were to ask the Governor for a proclamation, or if each were to ask for radio or TV time or for space in advertisement columns, the department might be put in an embarrassing situation. The use of the mat emblem met some of this opposition. I think that in future promotions these differences must be guarded against. Barriers must not be built up that might become harmful rather than helpful to the divisions. Larger participation by industry other than weights and measures can be the answer to most of the problems stated. The weights and measures department can be educational to an extent, but must be careful of an all-out promotion. This point is brought out as a word of caution.

Much of the weights and measures promotion was done by industry through its fine ideas and leadership in getting the publicity across. First I will mention that the Scale Manufacturers Association contributed a great deal of time and effort to this project. Arthur Sanders was a pillar in the promotion of Weights and Measures Week. The National Association of Food Chains, the American Petroleum Institute, the Glass Containers Manufacturers Institute, and many others should be mentioned here. Many States had very good working committees, and State associations took active parts

in the promotion of the Week. The Committee on Education of the Southern Weights and Measures Association took united action, and 83½ percent of member State jurisdictions took active part. Many cities, counties, and joint jurisdictions within the States were very active in the promotion of the Week.

Weights and Measures Week can be an every-week project for many areas. Not a week goes by that something interesting does not happen that should be publicized. Many of the members of this Conference take advantage of these situations and obtain very good publicity and public relations for their programs. Now many more of us have found out how this can be done, and we should employ these means more frequently in our local weights and measures programs. Grassroot publicity has been the key all the way through the Week's promotion, and this will be true for the Weeks to come. I know well the value of organization for the promotion of such a project. It has been brought to our attention that a central guiding organization might make the effort more successful. I believe there is a need for a central organization for this project—a central clearing-house where the many promotional ideas and experiences may be considered and then passed on to all the local people. The many fine ideas that came forth this year could be distributed next year. In other words, the fine things that were used to advantage in one locality could be used elsewhere. Such a central organization might be formed within the framework of the National Conference. But it must be remembered that such a promotion as a National Week is also the responsibility of representatives of industries associated with weights and measures administration. A joint effort will lend harmony and will be the best way to encourage wider participation and develop needed publicity material.

Now is the time to plan. Name your active committees in your various jurisdictions. You may or should use your State association or regional organization to start with. Put the responsibility on a committee that you know will work. Start the wheels for the third annual Week on an organized basis and keep in mind improvements over last year's project. Right timing with careful project planning in advance is the effort that pays off. Above all, have a responsible committee within each jurisdiction for reporting the results. The record is vitally important and is the only way to give to the Conference an accurate and full report.

Let us all set our aims high in our promotion for 1960. We can encourage the establishment of weights and measures programs in areas that need this most necessary work. Let the third annual Week be a Week of many new ideas and let it spread the words of our work to many more millions of our citizens. The 1959 Week has been an inspiration. It has been hard work, but we have enjoyed it, and the results have made the work well worth while.

DISCUSSION OF FOREGOING PAPER

MR. SANDERS: I sat in with the Education Committee yesterday, and I think the committee has a very good recommendation on National Weights and Measures Week. I should like to ask the opinion of Mr. O'Neill as to what is the real purpose of Weights and Measures Week, and what can the local weights and measures jurisdiction and the local interests, including the commercial interests like

scalesmen and so forth, expect from the promotion of Weights and Measures Week?

MR. O'NEILL: Results one can expect include a better support to do a better job. Our purpose should be clear to everyone. We are trying to enlighten all people as to weights and measures supervision. Many do not know what it is all about. They do not know what we are doing or how we are spending tax money. That is probably our main purpose, to let the public that has not had the chance to know about weights and measures learn something about it and better understand it so that they will support our program.

MR. LEITHAUSER: I would like to ask Mr. Arthur Sanders if he has any ideas on the further development of National Weights and Measures Week.

MR. SANDERS: I have been in this business for some 14 years now, and every year, and at every weights and measures meeting, including the National Conference, there is always a discussion of the problem of recognition of the essentiality of weights and measures. There is not recognition budget-wise, manpower-wise, and equipment-wise, and there is need for that. You cannot perform the service unless you do have the manpower, and you cannot have the manpower unless you have the budget.

We are weights and measures associates. We did not ask for it, but we in the scale industry are controlled by weights and measures officials. We think it is a good thing. The scale people recognize that scales must be inspected. We think that a real need of weights and measures is to educate the public to realize that there must be public support for weights and measures. This is the philosophy behind National Weights and Measures Week.

DR. GORDON: When I made my survey of State laws and their administration and enforcement in 1956, one of the questions I asked each State director was, "Do you have a public information program?" And as I reported to this Conference in June 1957, only seven men answered that question affirmatively. I think some were overly modest, but nonetheless, that was an amazing response. Consequently I laid great stress—I would as an educator—on the need for informing the public of the work, the very important work which is being done by weights and measures officials across the country.

This "Week" effort is largely due to Arthur Sanders and his association. This program has gotten off to an impressive beginning. This strikes me as being very auspicious because one of the things that stands out in weights and measures administration is the mutual-ity of interests.

However, if I may throw out a word of caution, I do not think that we should let ourselves be overly impressed with the one-shot 1-week type of performance. Not only have I glanced around at the publicity exhibit here, but I have read the reports and the Kansas Weights and Measures Newsletter, and others, and I draw the uneasy feeling that maybe we are getting overly impressed with the extent of the coverage without asking ourselves the question which has been asked here this afternoon, not only what is the purpose but also what are the results.

A public information program ought to be reaching the constituency in each jurisdiction so that those people will become sufficiently aware of the work which is being done that they will insist, through

their actions as voters, upon providing adequate funds to carry on that work. Consequently, I would think of this Weights and Measures Week as perhaps the starting point, the kickoff week for a year of public information. I simply wish to emphasize particularly the importance of working with groups like the Parent-Teachers Association and the other local groups, League of Women Voters, for example, American Association of University Women, organizations of that kind.

And finally, as was suggested yesterday in the Education Committee hearing, I believe there is a very real need for a coordinating committee, so that a good deal of duplication might be avoided.

MR. SANDERS: One point Mr. O'Neill raised is the question as to the propriety of a weights and measures official devoting time to this promotion; and essentially to the education of the public about the weights and measures work. In my opinion this is a valid effort of a weights and measures official.

MR. FULLER: We have always taken the position that our work consists of protecting the public. It goes far beyond the testing of pumps and scales and making sure they are accurate. So much of the success of it depends on the cooperation of the public who must be taught a few things about what to observe, what to look out for, how to help protect themselves, and, if they find something that is not right, who to call on.

Our governing board expects us to get out and make public talks, because they know that the success of the work depends on this cooperation of the public, and that the public must know what they are receiving for what they pay; and that they are really getting big dividends for what it costs for weights and measures work.

REPORT OF COMMITTEE ON EDUCATION

Presented by W. A. KERLIN, *Chairman, County Sealer of Weights and Measures, Alameda County, California.*

The Committee on Education has had five major projects under consideration during the past year. They were (1) public education, (2) self-education for officials, (3) technical training, (4) weights and measures periodical, and (5) National Weights and Measures Week—1960. For the purpose of open committee discussion, items (1) and (5) were combined.

1. *Public Education and National Weights and Measures Week.*—During the committee meeting it was suggested that either a separate standing committee or a subcommittee of the Committee on Education be formed to organize, control, and direct all affairs associated with the National Weights and Measures Week. Such a committee would also take under consideration such other matters that pertain to public relations. The committee recommends that, since this subject matter pertains to activities normally associated with the Committee on Education, a special subcommittee be established within this committee. The subcommittee would comprise one member of the Committee on Education who would serve as its chairman, three weights and measures officials, and three associate members representing the industry—all members to be appointed to 1-year terms by the chairman of the Committee on Education.

The committee received several suggestions to establish permanent dates for the observance of National Weights and Measures Week. It is therefore recommended by the committee to fix the dates of March 1 to 7 for all future observances of National Weights and Measures Week.

2. *Self-Education*.—It is the feeling of the committee that self-education for weights and measures officials is highly desirable and is a matter that should be taken advantage of; however, it must be practiced by the official himself. The committee recommends that all weights and measures officials take advantage of the many National Bureau of Standards publications, as well as other publications in the field of weights and measures administration. In order to be of assistance in this endeavor, the Committee on Education plans to compile and distribute a list of publications that are available.

3. *Technical Training*.—It is the recommendation of the committee that weights and measures officials should also endeavor to take advantage of the technical training programs offered by the Office of Weights and Measures of the National Bureau of Standards. One training program that is already in existence offers training schools of short duration which are conducted by members of the staff of the Office of Weights and Measures within a jurisdiction. A second program, involving a new technical training laboratory, is soon to be established at the National Bureau of Standards. This program is to be directed to supervisors and training officers from a jurisdiction, as described earlier in the meeting by Dr. Astin.

4. *Weights and Measures Periodical*.—During the past year the Committee on Education has diligently explored the possibility of obtaining a publisher for a national weights and measures periodical. Due to the limited circulation that would be involved, it was found that none of the recognized publishers that were contacted were interested in undertaking such a publication. There is now before the committee a suggestion to find someone within the ranks of weights and measures who has writing and editorial ability and an intimate knowledge of weights and measures administration to undertake this project. The committee hopes to find such a person who may be interested and available. It is recommended, therefore, that the possibility of publishing a national weights and measures periodical be pursued during the following year with the hope that by next year a definite recommendation may be made.

5. *Other Matters*.—The committee has been advised that the Scale Manufacturers Association is preparing a small illustrated booklet of suggestions on the selection, installation, and maintenance of motortruck scales. Since this booklet contains information of interest to weights and measures officials, it was suggested that the National Conference on Weights and Measures give its endorsement to the contents of this booklet. A statement to this effect would appear on the cover of the booklet. It is the consensus of the committee that such a booklet is in the best interests of weights and measures, and that it would be perfectly proper for the Conference to give its endorsement. It is so recommended.

Dr. Leland J. Gordon has informed the committee that he has compiled a national directory of weights and measures officials. This directory is now available at a nominal charge. Inquiries may be

directed to Dr. Leland J. Gordon, Director, Weights and Measures Research Center, Denison University, Granville, Ohio.

The Committee on Education solicits all members to bring to the attention of the committee any matter that may be considered during the following year which would be of interest to the members of this Conference.

W. A. KERLIN, *Chairman*
T. C. HARRIS, JR.
I. M. LEVY
J. E. MAHONEY
J. F. TRUE

(On motion of the committee chairman, seconded from the floor, the report of the Conference Committee on Education was adopted by a show of hands.)

REPORT OF SPECIAL FLOUR COMMITTEE

Presented by R. E. MEEK, *Chairman, Director, Division of Weights and Measures, State Board of Health, State of Indiana*

During his address to the 43d National Conference on Weights and Measures, Conference President A. V. Astin, Director of the National Bureau of Standards, suggested the establishment of a committee of the Conference to study further the matter of quantity control, under appropriate State laws, of packages of flour. In response to this suggestion, the report of the Executive Committee of the Conference included the following item:

In line with the suggestion of the Conference President, the Executive Committee recommends that the President appoint a special committee, for a term not to exceed 2 years, to further study the packaged-flour situation and report its findings to the Conference.

In accordance with the President's further suggestion, the Executive Committee recommended that such a new Flour Committee seek the assistance of, and work closely with, the Association of Food and Drug Officials of the United States, the Federal Food and Drug Administration, and the National Bureau of Standards.

The recommendations of the Executive Committee were adopted by the Conference, and a special Flour Committee was set up. One of the members appointed to this committee was Mr. E. L. Randall of Nevada, who is currently President of the Association of Food and Drug Officials of the United States. Technical consultation from the Federal Food and Drug Administration has been supplied by Mr. Lowrie M. Beacham, Assistant Director, Division of Food, Bureau of Biological and Physical Sciences, and from the National Bureau of Standards by Dr. A. T. McPherson, Associate Director for Engineering.

The Executive Committee, in its report to the Conference, noted that—

The committee desires that the record be clear with respect to the 1955 action of the National Conference that resulted from an exhaustive study in an honest attempt to devise a solution to the problem by the first Special Flour Committee. The Executive Committee emphasizes that its present recommendation is in no way intended to weaken that action of the National Conference on Weights and Measures.

The present Special Flour Committee met in Washington on February 24 and 25 for the purpose of again studying the entire problem. In accordance with the recommendation of the Executive Committee,

a committee representing the Millers' National Federation was invited to meet with this committee on February 25. The Federation committee comprised Mr. Oswald A. Oudal, Chairman, Director, Products Control, General Mills, Inc.; Mr. Charles E. Joyce, General Claims Manager, Pillsbury Mills, Inc.; Mr. John T. Lynch, General Sales Manager, International Milling Co.; Mr. Samuel H. Rogers, Jr., Wilkins-Rogers Milling Co., Inc.; Mr. J. J. Sherlock and Mr. C. L. Mast, Jr., of the Federation's Chicago office; and Mr. Fred Mewhinney of the Washington office of the Millers' National Federation. This Federation committee participated in an informative discussion, and submitted orally the following definite recommendations of the milling industry, later confirming them in writing:

1. Weights and measures officials should periodically check the weight of flour at the mill, where packages must be packed full net weight regardless of moisture content and where shrinkage due to evaporation is not a factor.

2. Beyond the mill the only satisfactory solution to the flour package weight problem must embrace giving recognition to the effect that change in the moisture content of flour has on the package weight.

Therefore: At any point beyond the mill, moisture content of flour must be taken into consideration and made a part of the checking procedure whenever flour packages are checkweighed.

The consensus of the Special Flour Committee is as follows:

The matter of correct weights in packages of flour has been a troublesome problem to weights and measures officials for many years. Flour is one of the many commodities that tend to lose moisture through evaporation under normal conditions of storage and thus may be expected to lose weight after leaving the manufacturer or packer. Obviously the moisture content of flour at the time of packaging and weighing has a definite effect on the tendency of the product to lose moisture in storage. The moisture content of flour at time of packaging may vary from a legal high of 15 percent to a low of about 10 percent.

To afford a reasonable legal control over the accuracy of the quantity statement on packages of flour, it seems necessary to establish either (1) a specified standard moisture content at which a package shall contain full labeled weight, or (2) a definite time at which a package shall contain full labeled weight. The second of these alternatives is that accepted in the Federal Food and Drug regulations and in most State regulations. The committee knows of no instance where alternative (1) has been placed into effect. The definite time specified in the Federal Food and Drug regulation is the time that the package is "introduced into interstate commerce."

Official action with respect to the quantity of contents in packages of flour has been taken by the National Conference on Weights and Measures on two previous occasions. In 1941 the Conference Committee on Methods of Sale of Commodities recommended, and the 31st National Conference adopted, a motion to the effect that packaged flour should be full "net weight at the time sold to the retail merchant." Observance of this same principle was recommended by the first Special Flour Committee in 1955 and was adopted unanimously by the 40th National Conference.

Although the present Special Flour Committee is in agreement with the actions of the Conference on these two previous occasions, it recognizes that the action in 1955 was based on what had been assumed by

the committee and the Conference to be a practical and acceptable working agreement between enforcement officials and the milling industry, and that there might be a legal question as to the statutory authority of many States, under weights and measures and food laws currently in effect, to enforce this principle. (This doubt respecting legal authority was recognized also by the first Special Flour Committee in 1955.

The present committee considers it extremely unfortunate that a fair trial was not given to the procedure adopted in 1955, based on the principle of full weight when delivered to the retailer. That agreement has been repudiated by representatives of the milling industry; therefore, the recommendations of this committee will be based not on an agreement, but on what is believed to be a firm legal foundation for a State and local enforcement program.

In order to develop data for study by the committee, the Federal Food and Drug Administration conducted a comprehensive survey of flour packages at the mills during the months of November and December 1958. A summary of the results of that survey as prepared and distributed by the Food and Drug Administration, follows:

SUMMARY OF RESULTS OF SURVEY OF FLOUR MILLS
CONDUCTED BY FOOD AND DRUG ADMINISTRATION,
NOVEMBER-DECEMBER 1958

Total number of mills inspected_____	68
Total number of lots of flour weighed_____	94
(Approx. 50 pkgs. weighed per lot)	
Total number of lots found slightly short weight_____	19
Total number of lots found definitely short weight_____	1

Results of Inspectors' Weighings (by package size)

Size of package, lbs_____	25_____	10_____	5_____	2
Number of lots weighed_____	4_____	9_____	66_____	14
Average net wt/pkg. (All packages).	25 lbs, 5.8 oz__	160.88 oz__	80.62 oz__	32.74 oz.
Average of minimum net wt found, each lot.	25 lbs, 0.9 oz__	159.63 oz__	79.53 oz__	32.24 oz.
Average of maximum net wt found, each lot.	25 lbs, 10.8 oz__	161.77 oz__	81.83 oz__	33.79 oz.
Number lots short weight____	0_____	3_____	15_____	1
Average shortage of short wt lots, percent.	_____	0.36_____	0.31_____	1.03
Maximum shortage, percent.	_____	0.87_____	0.73_____	1.03
Minimum shortage, percent.	_____	0.10_____	0.02_____	

SUMMARY OF MILLS' MOISTURE DETERMINATIONS

	Percent
Average moisture of flour being packaged_____	13.7
Average of minimum moistures reported by mills_____	12.8
Average of maximum moistures reported by mills_____	14.1
Minimum moisture reported_____	10.6
Maximum moisture reported_____	14.8

The one definitely short-weight lot found in the survey is not included in the above tabulation. This was a lot of 5-lb cloth bags which was weighed on the same day packed. The average net weight was 76.02 oz or 5% short weight.

Most of the lots were weighed the same day as packed; approximately 80% had been packed not longer than two days prior to weighing. The two oldest lots (of known age) were 22 and 24 days old. Both of these lots were up to declared net weight.

The short-weight lots were:

<i>Size package</i>	<i>Shortages</i>	<i>Size package</i>	<i>Shortages</i>
(5 lb 1 cloth)	4.97	(5 lb)	0.73
(5 lb 1 paper)	0.15	(5 lb)	0.16 (0 days)
(10 lb 1 cloth)	0.87		0.44 (7 days)
(10 lb)	0.10	(5 lb)	0.50
(10 lb)	0.10	(5 lb)	0.35
(5 lb)	0.07	(5 lb)	0.24
(2 lb)	1.03	(5 lb)	0.09
(5 lb)	0.07	(5 lb)	0.02
(5 lb)	0.40	(5 lb)	0.62
(5 lb)	0.66	(5 lb)	0.09

Approximately 10 percent of the flour mills in the United States have been covered by this survey. Mills of all sizes were covered. Twenty-four different States were represented in the sample.

The committee points out that all of the packages of flour weighed in this survey were weighed at the mill and *before* the flour had been introduced into interstate commerce. No allowance for moisture loss is permitted under the Federal Food and Drug Law and Regulations until “after” the package “is introduced into interstate commerce.” It seems evident, based on the data developed in this survey, that certain flour mills have not been complying fully with the requirements of the Federal law. (The committee makes note of the fact that the results of this survey conform very closely to the results of the survey made by weights and measures officials for the first Special Flour Committee in 1955.)

After careful consideration and lengthy discussion of the two recommendations made by the milling industry and of all other suggestions, the committee has arrived at two tentative conclusions. (1) It would not be practical at this time to attempt to establish a “specified” standard moisture content for flour—a standard to serve as the reference basis for net-weight statements. (Such a step undoubtedly would require changes in the Federal Food and Drug Law and Regulations and in many State laws and regulations.) (2) State and local weights and measures officials cannot properly recognize a loss in weight of prepackaged flour before the package is introduced into *intrastate* commerce—that is, before the package comes under the jurisdiction of the State law—even though such loss in weight may have been caused by ordinary and customary exposure of the package prior to the time of introduction into intrastate commerce.

The present Special Flour Committee submits for the consideration of the 44th National Conference on Weights and Measures two basic recommendations and seven specific recommendations. The two basic recommendations are as follows:

1. It is recommended that no action be taken relative to a standard moisture content for flour, but that weights and measures officials continue to give this suggested solution their careful consideration, not only for flour, but for the many other commodities posing similar moisture-loss problems.

2. It is recommended that the 44th National Conference on Weights and Measures endorse and encourage the States to adopt a program of enforcement, relative to prepackaged flour in particular and all prepackaged items in general, based on the Model State Law on Weights and Measures, the Model Regulation for Package Marking Requirements, and the Uniform State Food, Drug and Cosmetic Bill.

To assist in the implementation of the second basic recommendation, and to assure complete legality of the program in any given jurisdiction, the committee urges that all State and local weights and measures and food and drug officials examine thoroughly and completely their laws, ordinances, and regulations. Whenever it is determined that such laws, ordinances, or regulations are not thoroughly appropriate to provide adequate legal support for the recommended action, it is strongly recommended that necessary amendments be prepared, offered, and supported without delay.

In order to further clarify the intended meaning of the Model Law and Model Regulation, and in order to be of maximum assistance to the enforcement official in expediting the placing in effect of the program, the present Special Flour Committee has offered, for the consideration of the Conference Committee on Laws and Regulations and ultimate adoption by the 44th National Conference on Weights and Measures, the following proposed amendments to the Model Law and Model Package Marking Regulation:

Section 19, of the Model State Law on Weights and Measures (Form 2) currently reads as follows:

SEC. 19. *SAME: DECLARATIONS ON PACKAGES.*—That except as otherwise provided in this Act, any commodity in package form shall bear on the outside of the package a definite, plain, and conspicuous declaration of (1) the net quantity of the contents in terms of weight, measure, or count, and (2) in the case of any package not sold on the premises where packed, the name and place of business of the manufacturer, packer, or distributor: *Provided*, That the qualifying term “when packed” or words of similar import, shall not be used in connection with the declaration required under clause (1): *And provided further*, That under clause (1) the superintendent shall by regulation, establish reasonable variations or tolerances to be allowed, and also exemptions as to small packages.

The current Special Flour Committee recommends that Section 26 of the revised version be made to read essentially as follows:

SEC. 26. *SAME: DECLARATIONS OF QUANTITY AND ORIGIN ON PACKAGES; TOLERANCES; EXEMPTIONS.*—That except as otherwise provided in this Act, any commodity in package form introduced or delivered for introduction into or received in intrastate commerce, kept for the purpose of sale or offered or exposed for sale in intrastate commerce, shall bear on the outside of the package a definite, plain, and conspicuous declaration of (1) the net quantity of the contents in terms of weight, measure, or count, and (2) in the case of any package not sold on the premises where packed, the name and place of business of the manufacturer, packer, or distributor: *Provided*, That in connection with the declaration required under clause (1), neither the qualifying term “when packed” or any words of similar import, nor any term qualifying a unit of weight, measure, or count (for example, “jumbo,” “giant,” “full,” and the like) that tends to exaggerate the amount of commodity in a package, shall be used: *And provided further*, That under clause (1) the superintendent shall, by regulation, establish (a) reasonable variations or tolerances to be allowed, which may include variations below the declared weight or measure caused by ordinary and customary exposure, only after the commodity is introduced into intrastate commerce, to conditions that normally occur in good distribution practice and that unavoidably result in decreased weight or measure, (b) exemptions as to small packages, and (c) exemptions as to commodities put up in variable weights or sizes for sale to the consumer intact and either customarily not sold as individual units or customarily weighed or measured at time of sale to the consumer.

The committee also recommends that a new section be added to the Model Law, to be appropriately placed and numbered, to read as follows: [Note: See Sec. 1(7) of the revised version.]

SEC.—. The term “intrastate commerce” shall be construed to mean any and all commerce or trade that is begun, carried on, and completed wholly within the limits of the State. [This definition conforms to that given in Black’s Law Dictionary, Fourth Edition.]

Paragraphs (i) and (j)(1) of the Model State Regulation for Package Marking Requirements currently read as follows:

(i) Where the statement expresses the minimum quantity, no variation below the stated minimum shall be permitted except variations below the stated weight or measure caused by ordinary and customary exposure, after the commodity is sold and delivered by the manufacturer, packer, or distributor, to conditions which normally occur in good distribution practice and which unavoidably result in decreased weight or measure. Variations above the stated minimum shall not be unreasonably large.

(j) Where the statement does not express the minimum quantity—

(1) variations from the stated weight or measure shall be permitted when caused by ordinary and customary exposure, after the commodity is sold and delivered by the manufacturer, packer, or distributor, to conditions which normally occur in good distribution practice and which unavoidably result in change of weight or measure.

The committee recommends that paragraphs (i) and (j)(1) of the Model State Regulation for Package Marking Requirements be amended to read as follows:

(i) Where the statement expresses the minimum quantity, no variation below the stated minimum shall be permitted except variations below the stated weight or measure caused by ordinary and customary exposure, after the commodity is introduced into intrastate commerce, to conditions that normally occur in good distribution practice and that unavoidably result in decreased weight or measure. Variations above the stated minimum shall not be unreasonably large.

(j) Where the statement does not express the minimum quantity—

(1) Variations from the stated weight or measure shall be permitted when caused by ordinary and customary exposure, after the commodity is introduced into intrastate commerce, to conditions that normally occur in good distribution practice and that unavoidably result in change of weight or measure.

The seven specific recommendations of the committee are as follows:—It is recommended that—

1. Every State and local jurisdiction initiate and maintain a comprehensive enforcement program based on the principle that packages of flour shall contain full net weight when introduced into intrastate commerce.

2. Flour packages shall be so packed that at any time prior to, and at the time of introduction into, intrastate commerce, the packages will be full net weight as defined in paragraph (j)(2) of the Model Regulation for Package Marking Requirements.

3. Weights and measures officers shall recognize as reasonable and proper any shortage from declared weight that results from the unavoidable loss of moisture from flour packages stored under reasonable conditions after introduction into intrastate commerce.

4. Where possible, weights and measures officers, as a practical enforcement procedure, concentrate their check-weighing of flour packages largely at the

distributor level—that is, at the warehouses of mills, jobbers, distributors, and store chains. In a majority of instances this will be prior to introduction into intrastate commerce and moisture content is not a matter for consideration. When check-weighing at retail outlets, any shortages found are to be considered in relation to average warehouse weights for similar packages of the same brand of flour before the packages are introduced into intrastate commerce, and, if the magnitudes of the shortages do not exceed what the weights and measures official determines to be a reasonable moisture loss, the packages should be treated as satisfactory for sale. Moisture determinations can be resorted to if required, but usually should be unnecessary. (If moisture determinations are made, these should be made in accordance with the standard procedure established by the Association of Official Agricultural Chemists.)

5. If and when short-weight packages of flour are discovered prior to or at the time of introduction into intrastate commerce, or when unreasonably large shortages are found after introduction into intrastate commerce, appropriate legal action should be taken. (Such legal action may take the form of ordering the packages off sale, prosecution, or both.)

6. For use in the check-weighing program, a series of average tare weights should be determined for each brand and each package size, and these should be verified from time to time. In setting up such a list of average tare weights, it is suggested that the mean of the actual tare weights of the lightest and heaviest packages of a sample representing a lot be used if these two tare weights are found to be in good agreement; otherwise, a greater number of actual tare weights should be determined to arrive at an acceptable average.

7. Local officials should work as closely as possible with their State office in effectuating this program.

[A practical step-by-step guide for a package control program will be found in National Bureau of Standards Handbook 67, Checking Prepackaged Commodities.]

It will be noted that the recommendations of this committee and those of the first Special Flour Committee differ in only minor respects. Under normal progress in commerce, the actual time of introduction into intrastate commerce will coincide generally with delivery to the retail outlet. Only in special circumstances will there be any differences, and these normally will not be significant. The committee is convinced that the procedures recommended by the first Special Flour Committee and adopted by the 40th National Conference on Weights and Measures were realistic, practical, workable, and fair to the producers, marketers, and consumers of flour.

There is offered below a bibliography of recent National Conference on Weights and Measures consideration of the flour package problem. The committee recommends that weights and measures officials study carefully each of the items listed.

Report of Conference Committee on Methods of Sale of Commodities, by Alex Pisciotta, Chairman, page 121 NBS Miscellaneous Publications 170, Report of the 31st National Conference on Weights and Measures.

Flour Weights, by Herman Fakler, Vice President, Millers' National Federation, page 32 NBS Miscellaneous Publication 209, Report of the 38th National Conference on Weights and Measures.

Report of Special Flour Committee, by J. P. McBride, Chairman, page 58 NBS Miscellaneous Publication 212, Report of the 39th National Conference on Weights and Measures.

Report of Special Flour Committee, by J. P. McBride, Chairman, page 87 NBS Miscellaneous Publication 216, Report of the 40th National Conference on Weights and Measures.

The committee reiterates that its recommendations are based on the legal concept that the authority of State and local weights and measures officials, under the police power of the State, extends only to the borders of the State and that the States do have the authority to exercise control over commodities in package form in intrastate commerce. Any enforcement program designed for the control of quantity in prepackaged merchandise must, therefore, be such as to require compliance with law after such commodities come within the jurisdiction of the State, and the person responsible for introducing a commodity into intrastate commerce is liable to the State.

The committee is convinced that its recommendations are in harmony with the Federal laws and regulations in this field and that they are reasonable and acceptable within the intended meaning of a large majority of existing State weights and measures and food and drug laws and regulations.

It is the unanimous conviction of the committee that, should State and local weights and measures officers recognize moisture loss in prepackaged commodities when such moisture loss occurs before the packages enter the jurisdiction of the State, the entire package-control program of the State would collapse.

The committee met in open session at the headquarters hotel, as scheduled, and is appreciative of the many contributions during that meeting.

Prior to the scheduled open meeting, the committee received from the Millers' National Federation Flour Committee a series of recommendations, as follows:

1. The flour milling industry will pack flour so as to assure full average net weight at the *time and place* of first delivery from the mill.
2. At any *time and place after* this first delivery, recognition shall be given to and tolerance allowed for moisture loss.

It is the consensus of the committee that these suggestions of the industry must be rejected, and it is so recommended. Any such "agreement" would be without basis of legal substantiation and would not provide a satisfactory solution to the problem at hand.

The committee has discussed the language of the regulations pertaining to quantities of packages that have been promulgated under the Federal Food, Drug, and Cosmetic Act, and is of the unanimous opinion that these should be amended by the Federal Government in order to bring about better Federal-State cooperation on packages shipped in interstate commerce. The regulations presently allow variations in quantity of contents of packages such as are caused by losses of moisture and consequent losses of quantity after the packages have been introduced into interstate commerce.

The authority of the Federal act generally applies any time after introduction of packages into interstate commerce. Accordingly, the committee urges that the Federal Food and Drug Administration take immediate steps to amend "quantity" regulations so as to bring them into line with the concepts presented in the tentative report of the Special Flour Committee.

The committee further urges that the Commissioner of Food and Drugs keep the State and local weights and measures officials fully informed of progress of this nature, particularly of any hearings that have been or are to be scheduled.

The Special Flour Committee feels that it has discharged its obligation and fulfilled its responsibilities and recommends that the committee be abolished.

R. E. MEEK, CHAIRMAN
T. C. HARRIS, JR.
C. L. JACKSON
J. P. McBRIDE
E. L. RANDALL
L. M. BEACHAM, CONSULTANT
A. T. McPHERSON, CONSULTANT
W. S. BUSSEY, SECRETARY

DISCUSSION OF FOREGOING REPORT

MR. OUDAL: Mr. Chairman, members of the National Conference on Weights and Measures. As indicated, I am appearing in the capacity of Chairman of the Millers' National Federation Flour Committee. First of all, let me express to your Chairman and also to you my appreciation, both personally and on behalf of our committee, for the opportunity to appear.

Our committee met with your Special Flour Committee the latter part of February of this year. At that time we presented certain proposals. About a month ago we received a copy of the tentative report, which indicated that the proposals we had presented were declined. Subsequent to that, we have submitted an additional proposal, and in addition have submitted to your committee a report of our review of the tentative report and of our most recent suggestions.

We have requested this audience in order that this Conference be kept fully informed as to all aspects of this difficult problem and so that you are fully aware of the very recent proposals made by the milling industry in the hope of assisting in resolving this problem. I should like, therefore, at this time to read to you verbatim a copy of our reply to the tentative report which was placed in the hands of your committee very recently—within the past week to 10 days:

The flour milling industry requested the 43d National Conference on Weights and Measures held in June of 1958 to reconsider the flour weight problem. This new request was made principally because there was good reason to believe that moisture content of flour could be made a part of the package check-weighing consideration. This hope received further stimulus in the address made to the Conference last year by President Dr. A. V. Astin, Director of the National Bureau of Standards.

In his address Dr. Astin commented, "I am recommending that the Conference restudy this situation specifically with respect to the still unsolved matter of flour packaging and more generally with respect to all problems where a change in moisture content is of importance." He indicated that much of the confusion that now exists is due to inadequate techniques of instrumentation for establishing moisture test methods. He further stated, "This condition will continue to exist until we quit guessing about moisture content and actually measure moisture content. The National Bureau of Standards would be happy to provide technical assistance in resolving the measurement aspects of this problem, if it is the desire of the Conference."

Your Special Flour Committee has considered this problem and formulated a tentative report. Our Millers' National Federation Flour Committee has reviewed this report carefully. We are disappointed in that our request that moisture content of flour be made a part of the check-weighing procedure was declined. However, it is encouraging to note that the matter will continue to receive consideration by weights and measures officials.

After carefully considered thought covering all aspects of the flour weight problem, our committee is prepared to suggest a new approach which hope-

fully could lead to a satisfactory solution. This proposal is made with the request that the present tentative report be delayed, or that it be amended before it is sent to the Conference floor. In addition, we suggest that the change proposed in section 26 of the tentative report of the Committee on Laws and Regulations be deleted or amended.

Before outlining our proposal we shall take the liberty of commenting on the more significant items in the tentative report of your committee as we view them. These comments are admittedly critical but outline our reasons for suggesting the delay or amending of the report in its present form.

1. The report states that it is "extremely unfortunate that a fair trial was not given to the procedure adopted in 1955 based on the principle of full weight when *delivered* to the retailer." This is not borne out by the record. The experience of but one of the major milling companies in this country shows otherwise. Since the Special Flour Report of 1955 was made, this one mill has been exposed to over a hundred separate incidents in a dozen or more States throughout the country where flour was condemned for short weight at *retail* level. These incidents involved only retail stores and there was no evidence that any attempt was made to determine if the flour was full weight when *delivered* to the retailer, neither was there any allowance for tolerances due to moisture loss *after* delivery to the retail store as recommended in the 1955 report. Combining similar experiences of other mills provides ample evidence that the flour milling industry had given the whole matter a "fair trial" but could not begin to comply with certain of the recommendations in the original report.

2. The report indicates that State weights and measures officials cannot properly recognize a loss in weight of prepackaged flour before the package is introduced into intrastate commerce—that is, before the package comes under the jurisdiction of State law.

If our interpretation is correct, this would mean that the State weight inspector could not check flour, or take legal action, if weight discrepancies were noted at warehouse or jobber level where flour usually would not have entered the intrastate commerce phase. We doubt that such restriction would be valid, nor is intended. If it were, this would then be in conflict with recommendation No. 4 which suggests concentration of check-weighing at warehouse level where again in many, perhaps most, instances the intrastate commerce phase would not have become applicable.

3. It is indicated that after flour enters the intrastate commerce phase weights and measures officers shall recognize as reasonable and proper any shortage from declared weight that results from the unavoidable loss of moisture from flour packages stored under reasonable conditions. It is also indicated that, if necessary, moisture determinations could be made to establish the validity of these shortages, although it would be generally unnecessary to do so.

It is usually claimed that it is not practical or possible for weight inspectors to arrange for moisture determinations. We realize that this is difficult to do and may be impractical in some jurisdictions, yet it is indicated that such analyses could be made after flour enters the intrastate commerce phase, if necessary to do so. If this information can be obtained at this point, it should be equally possible to make similar determinations at other points such as the wholesale or jobber level. In addition, the National Bureau of Standards has offered its assistance in devising ways and means of taking moisture content into consideration.

4. The Special Flour Committee urges that amendments be made to the Model Law to incorporate the intrastate commerce approach and to provide what has been construed to be the "intended" meaning of the Model Law. It is further recommended that existing State laws and regulations be changed to be in harmony with the suggested modifications for the Model Law.

We believe that this recommendation is inconsistent with one of the major objectives of the National Conference, which is to promote uniformity and standardization of weights and measures practices.

Of greater import is the question of the legality of this approach. It is the opinion of our industry and corporate counsel that this recommended change is repugnant to the Constitution of the United States and therefore unconstitutional and void in that:

1. The recommended measures would violate the due process and equal protection provisions of the 14th amendment, and

2. The recommended measures would impose an undue burden on interstate commerce.

This could well mean that unless this reference in the tentative report is amended, it might ultimately require a court opinion for final solution. This is not the preferred procedure by the milling industry, and we feel certain it is equally undesirable to weights and measures officials. We would therefore like to offer a new proposal that we believe will better serve our own and weights and measures interests.

Our proposal involves commitments and obligations on the part of both the milling industry and by weights and measures officials. We propose the following:

1. The flour milling industry will package flour so as to assure full average net weight at the *time and place* of first delivery from the mill.

2. At any *time and place* after this first delivery recognition shall be given to and tolerance allowed for moisture loss.

We have assurances from the leaders in the flour milling industry that this obligation and agreement will be honored on the premise that weights and measures officials will likewise abide by this agreement and honor their obligations involved.

It would be expected that this proposal will be made effective when and if it is formally approved and adopted by the National Conference on Weights and Measures officials.

We respectfully urge and request favorable consideration and action by your Special Flour Committee and subsequently by the National Conference.

The Millers' National Federation Flour Committee is ready to discuss this proposal further if desired and will be at your disposal.

That concludes the formal report or letter of communications as it was addressed to your Flour Committee.

We sincerely regret that in their report to this Conference your committee recommends that our proposal be declined. In fairness to your committee it should be said that the proposal has been in their hands for consideration for a very short time—approximately a week. It is entirely possible, therefore, that lack of time has not permitted adequate study of the significance and the potential advantages of the proposal. We can see no valid reason for rejecting our proposal. We have been told by many of you on occasions in the past that the whole flour problem could be resolved if the mills would, and I might say, "put a little more flour in the bag." This in effect is what is now offered, not because we feel it is obligatory on the part of the milling industry; it is done entirely in the spirit of cooperative effort. By establishing a reference point that has a reasonable chance of being practical, everyone concerned could benefit.

There is really nothing for weights and measures officials particularly to lose. We do not make any reference to nor recommendation toward changing any existing laws in any way.

We urge that this Conference give very careful thought to the reports submitted and avoid any hasty action, and we would respectfully suggest that the report be delayed until such time as each of you individually and collectively has had an opportunity to study the import of both the tentative and the final reports of your Special Flour Committee, as well as to carefully review the potential benefits indicated in the proposal made. We think it could go a long way toward resolving the present problem.

MR. R. E. MEEK: Gentlemen, first I want to express my appreciation to the representative of the Millers' National Federation. Over a week ago Mr. Oudal called me from Minnesota and asked me for an appointment in Indianapolis to discuss the proposal. Mr. Oudal, Mr. Joyce, and Mr. Sherlock, representing the Federation, came to discuss this

problem. We did discuss it at some length. My personal thinking was that they had made a concession.

Immediately upon their return to Minnesota they prepared the statement Mr. Oudal just read. I received copies of their statement on Friday morning a week ago. I had it in the mail, special delivery to the committee within 15 or 20 minutes. And the committee has had it since that time, and has given very careful consideration to the suggestions proposed.

The committee did decline to accept the proposals on several, we think, very good grounds, one of which was that it was an agreement somewhat similar to what we thought was in effect in 1955 when the original Flour Committee's report was accepted by the Conference; it was an agreement that they were in no position to assure us that all flour millers of the United States would comply with. After all, not all millers belong to the Federation. So we felt that it was necessary that we recommend a procedure that could be backed by law.

The second reason was that, since it was a concession in that it did offer an assurance of full-weight flour to the first point of delivery, the committee felt that, if the flour millers of this country could go that far, they could go all the way and assure full weight at the time the flour is introduced into intrastate commerce.

So for two very good reasons, the committee felt that we could not accept the proposals.

It is to be admitted by this committee that moisture in flour is a problem. It also is a problem in many, many other food products. If the principle espoused by the Federation is true, and if the rights and the privileges they ask under the proposal were to be granted, we see no reason why weights and measures officials should not give to all packagers and processors of food the same privileges. The committee felt very strongly on this point and felt that to go along with it would mean that we would lose control over the weights of prepacked merchandise at the time—particularly foods—that these enter intrastate commerce.

The committee also recognizes that there is a question as to the legality of this particular recommendation. On the other hand, our attorneys could not find a specific case which has ever been tried before the higher courts of this country where the decision would contradict our recommendations. Cases have been cited pro and con which would seem to substantiate or reject this position, so that we, no more than the Millers' Federation, know for sure whether this is sound.

There is a possibility that the Federal Food and Drug Administration will at least consider changing its regulations so that the Federal Government will then require what the committee recommends the State require. We do not know, of course, what attitude the Federal Food and Drug Administration will take, but they do have that right, because after all the point at issue is a regulation adopted by the Federal Food and Drug Administration and is not an enactment of our Congress.

Again I should like to repeat, the flour millers have agreed in their alternate report of suggested recommendations that they would put more flour in the bags to assure delivery of full weight flour at the first point of delivery, and we as a committee believe that, if they do

that, they will largely eliminate the problem. Very little, if any, more flour, in our opinion, would have to be added to assure the delivery of full-weight flour at the time it enters intrastate commerce. We know there are exceptions. For instance, if flour millers ship flour from Minnesota to Indiana, we know there will be a little loss, but I am informed rather reliably that the greater loss in moisture in flour occurs in the earliest exposure; so I do not believe that the problem is as great as is being made out here.

I would again like to support the committee's recommendations.

MR. LEITHAUSER: Mr. Meek, if I understand you right, you said you do not know whether this recommendation is on sound ground or not. Is that true?

MR. MEEK: In our opinion, the committee recommendation definitely is sound, but there is a division of thinking between the weights and measures officials, on the one hand, and the millers, on the other hand, as to whether or not it is. The committee feels that it is on sound ground.

MR. LEITHAUSER: Has the committee consulted competent authority to determine whether the recommendation is legally sound?

MR. MEEK: The committee would not have made this recommendation had it not thought it was on sound ground. We respect the views of the Federation. They think we are not. But our committee does think we are on sound ground. And I will assure you that we have discussed this with competent attorneys, legal staffs, and we believe, on the basis of information we have received, that we are on sound ground, and it is equally true that the millers have consulted their attorneys and they think we are not. But the committee feels that we are on sound ground and so recommends.

(On motion of the committee chairman, seconded from the floor, the report of the Special Flour Committee was adopted by voice vote.)

THIRD SESSION—MORNING OF WEDNESDAY, JUNE 10, 1959

(H. M. TURRELL, Vice Chairman, Presiding)

REPORT OF EXECUTIVE COMMITTEE

Presented by C. M. FULLER, *Chairman, County Sealer of Weights and Measures, Los Angeles County, California*

The Executive Committee held an open meeting during the morning of Monday, June 8, to supplement the correspondence carried on since the last National Conference. Items presented as recommendations of the committee to the Conference are listed below.

1. *International Yard and Pound*.—The Executive Committee notes with wholehearted approval the agreement by the Director of the National Bureau of Standards with the heads of the National Laboratories of other English-speaking nations to establish an international yard and an international pound and thus to take a definite step toward international uniformity in units of weights and measures. The committee congratulates the Conference President on this action and is requesting the Conference Committee on Resolutions to present a resolution urging the Congress of the United States to take forthright action in compliance with Constitutional provision and fix by statute these and other national standards of weights and measures.

2. *Conference Registration Fees*.—As has been the custom for many years, the Executive Committee, at its Friday morning session during the 43d National Conference, voted unanimously to establish the registration fee for the 44th Conference at \$10. A question was raised concerning the authority of the Executive Committee to take such action, since the Conference Organization and Procedure adopted in 1957 does not specifically charge the Executive Committee with this responsibility. It is the opinion of the committee that it does have such authority. However, since the Organization and Procedure does not deal specifically with this important point, your committee feels that it should be made specific by a vote of the Conference. The committee recommends, therefore, that the following motion be adopted:

The incoming Executive Committee elected at any National Conference is specifically authorized to hold a business session before the adjournment of that Conference. This meeting may be held at mealtime, and the Conference Treasurer is authorized to pay for said meal. In addition to the duties and authority outlined in the Conference Organization and Procedure, the Executive Committee is specifically authorized to establish the amount of the registration fee for the Conference for which it has been elected to serve.

DISCUSSION ON ITEM 2

MR. KENNEDY: The committee reports that a question was raised concerning the authority of the Executive Committee to establish the registration fee for the Conference. That question was raised by me. It is my opinion that, since the Conference's Organization and Procedure adopted in 1957 is silent on the point of registration fees, that document should be amended to include such provision. I would have no objection to an amendment charging the Executive

Committee with the responsibility, but I do not feel that a simple action by the Conference is adequate. The Organization and Procedure specifies that "proposals for changes in organization or procedure of the Conference are not acted upon until the meeting of the Conference following the meeting at which such proposal is made."

I am opposed to the authorization by the Conference for the payment of meals for the members of the Executive Committee.

MR. FULLER: The reference to the meal in the committee recommendation is to a breakfast that has been held customarily the morning of the last day of the Conference. This is about the only time that the newly elected Executive Committee can be gotten together to discuss the plans for the succeeding Conference and is in my opinion proper and appropriate. As to the authority of the Executive Committee to establish the amount of the registration fee for the Conference for which it has been elected to serve, this has been accepted as the responsibility of the Executive Committee for many, many years. Since the Organization and Procedure is silent on this point, it certainly appears that precedent should prevail and the group elected to make plans for a Conference be authorized to establish the fees to cover the expenses of the Conference. That is the recommendation of the Executive Committee.

MR. KENNEDY: Would you accept as an amendment to your motion that the 44th National Conference ratify the action of the Executive Committee which met in 1958 and established the registration fee of \$10 and, further, that the following amendment be made to the Organization and Procedure of the Conference? "The incoming Executive Committee elected at any National Conference is specifically authorized to hold a business session before the adjournment of that Conference."

MR. FULLER: I cannot accept such an amendment because this is a report of the committee and I am not authorized to change that report, and further it would not in my mind be proper to confuse the committee report by a proposed amendment to the Organization and Procedure.

(On a voice vote, the Chair ruled that item 2 had been adopted by the Conference. At the request of a delegate, a standing vote was called for and the recommendation of the committee carried by the vote 59 to 0.)

3. *New States*.—The committee expresses its pleasure that the National Bureau of Standards presented in impressive ceremony a set of weights and measures standards to the new State, Alaska, and commends the Bureau for this act. The committee recommends that the Bureau plan to make a like presentation to the new State, Hawaii, and that this ceremony of presentation be held during the 45th National Conference on Weights and Measures in order that many State and local weights and measures officials and their associates in business and industry may attend. A resolution to this effect has been transmitted to the Conference Committee on Resolutions for consideration.

4. *Official Conference Travel*.—The Executive Committee has explored the matter of necessary travel of certain of its committees on behalf of the Conference. For example, it occasionally is necessary for a standing or special committee of the Conference to meet on a

matter that cannot be otherwise resolved. The Executive Committee has established a plan whereby the chairman, four vice chairmen, and treasurer make up a Travel Finance Committee. This committee may authorize and approve in advance the payment of travel costs, including transportation and per diem at the Federal Government rate, for necessary travel and only to the limit of funds available. The Executive Committee recommends approval by the Conference body of this Executive Committee action.

5. *Publication Policy of the National Bureau of Standards regarding Weights and Measures Publications.*—The committee is of the unanimous opinion that the splendid progress made toward achieving the desired uniformity in State laws, administration, and inspection methods during the last half century has been largely due to the co-operative program developed by the National Bureau of Standards. The Bureau's employees have been and are recognized authorities in the many phases of weights and measures supervision and administration. Their publications, which have always had the unqualified recommendation of the Bureau and the endorsement of this Conference, serve as vital guides to State and local weights and measures officials. Handbook 11, *Weights and Measures Administration*, for example, was first issued in 1927, reissued as Handbook 26 in 1941, and a new edition is now being prepared.

The methods of administration as recommended in this handbook are basic and right. They have never been questioned. They have withstood the test of time.

The committee unaimously recommends that the publications policy of the Office of Weights and Measures continue on the same basis that has proved so very effective in the past and that the revision of Handbook 26 be prepared and published as soon as practicable.

The committee appreciates the opportunity to serve the Conference and is grateful for the cooperation of Dr. Astin and Dr. McPherson of the National Bureau of Standards and of the members of the Conference who have aided in its deliberations.

(On motion of the committee chairman, seconded from the floor, the report of the Executive Committee was adopted by voice vote.)

COMMUNICATIONS IN WEIGHTS AND MEASURES ENFORCEMENT

By W. C. BOYD, *Chief, Sanitary Bedding Section, Division of Weights and Measures, State Board of Health, State of Indiana*

Communication is an art as old as mankind, but unfortunately it is becoming a "lost art" in our modern business world. The world grows smaller each day through the magic of electronics, and yet people working for the same organization are strangers to the organization's purposes, procedures, and goals. Management has come to the realization that an organization cannot become more effective than the communications skill that coordinates its efforts. As a result, American business and industry spent an estimated \$112 million in the past year to learn how to communicate more efficiently.

What is communication? One author has said, "Communication is 'saying' dressed up in its Sunday best." The dictionary gives several meanings: "To share in"; "To give to another"; "The exchange

of thoughts, opinion and ideas." In Social Science, communication is the transmission of a message—a message that carries ideas, information, and other values. The basic problem in communication is to convey the message in such a manner that it will be understood precisely as intended.

In all, there are 27 methods of exchanging information. Most of these are limited substitutes for face-to-face discussion. In the early days of American business, individual enterprises were small enough to permit man-to-man discussion of personal and administrative problems. Today, due to business and industrial expansion, these personal discussions are not usually practical. Consequently, communications now involve more time and people than does any other single administrative activity. In fact, the average administrator spends 90 percent of his time talking, writing, or listening, all of which are a part of the communication process.

Weights and measures administration in the United States has, through the years, kept pace with business and industrial growth. This fact is adequately illustrated by the attendance records of the National Conference. In 1905, an organization, now known as the National Conference on Weights and Measures, met at the National Bureau of Standards. This first meeting was attended by 11 delegates, one of whom was an equipment manufacturer. Last year, the National Conference had a total registered attendance of 424. Of this number, 178 associate members represented manufacturers of weighing and measuring equipment, trade associations, business and industry. Operating as we do, with the Office of Weights and Measures, National Bureau of Standards, providing technical services, information and advice, and with State and local officials engaged in enforcement work, it is essential that we maintain a uniformity of purpose, procedure, and program. To this end, we too use communications, and, like business and industry, we have turned to social science to learn more about effective communication.

You will recall that our basic problem is to convey our ideas, thoughts, and information in such a way that our message will be understood precisely as intended. In personal discussions of a mutual problem, we not only hear the message, but we can depend on the speaker's tone of voice, inflections, and actions to convey his intent. If misunderstanding or misperception occur, we can continue the discussion until a mutual understanding exists.

Conversely, written communications are similar to the telegraph. Once transmitted, the message is beyond the sender's control. What the message means to the person receiving it, the attention he gives it, and his response to it will depend on the effectiveness of the content and the method of transmission. The effectiveness of our day-to-day communications can be improved simply by applying certain practical principles that are the result of extensive research in the field of human motivation.

Every individual is the center of a communication network. People and things constantly seek his attention. You want him to pay attention to your message, but you can't make him if he doesn't want to; not even if you pay him. Plenty of people go to sleep or day-dream on company time. There has to be a reason for the person to pay attention—an incentive—and there can be if you will create it.

Social scientists have proven conclusively that every individual, regardless of his station in life, is motivated by four basic urges or "rewards." These are:

- (1) *Social Response*: The desire to belong; to be a member of the team.
- (2) *Security*: A job, a pay check, freedom from fear, doubt, or want.
- (3) *Recognition*: Self-esteem, pride, the desire to be "somebody"; also called "ego."
- (4) *New Experience*: A desire for learning or knowledge, a chance to stimulate his interests or abilities.

If your message appeals to one or more of these motivations, it will get attention.

People need to understand a message before they can give it their best efforts. They need to know the "why" as well as the "what." The old idea of "do-this-or-else" went out of existence with the realization that people are different from machines. Correspondence is a substitute for a personal meeting. When you write a letter, a memorandum or a bulletin, you want it to do what you would do if you called in person.

If your correspondence is to represent you in a favorable, advantageous manner, it must be:

- (a) *Correct*: In form and content. An inaccurate message does real harm and it gives official status to error;
- (b) *Definite*: To the degree that the reader will get the intended meaning, and no other;
- (c) *Complete*: In that it includes every essential point, and does the job thoroughly; and
- (d) *Courteous*: In that it reveals, by word and tone, true friendliness and a desire to understand the other person's viewpoint.

I have been discussing communication as a means of exchanging information, but it has another important function—that of reporting to interested parties what has been done. The reporting function is, in general, not as well understood as the exchange of information. The majority of reports are written out of sheer compulsion, usually because of a legal or moral obligation to count up the score to satisfy a supervisor, a budget committee, or perhaps the general public. The best that can be said for such reports is that they fulfill the limited purpose of setting out in print a bare record of facts.

Business and governmental organizations have grown so large that there are few if any of us who do not have supervisors and associates to whom we must report our activities. Keeping these people informed does *not* mean that we are to be a substitute for the daily newspaper; neither are we expected to be the secret agent of the organization "grapevine." It *does* mean that our supervisor should hear about our success or about any unusual service we have been able to give to associates, the organization, or to the public. It also means that he should hear about our errors directly from us and not from some other source.

Oral reports have only one real advantage. This is the opportunity for all persons concerned to discuss the problem personally. The principal objections to oral reports are that they do not provide a permanent record and that it is difficult to correctly relay the report to others.

On the other hand, a well-written report that includes both statistics and an interesting narrative can teach new and important facts

about conditions that give your office a reason for existing. It can help you gain the support of your supervisors and the public. Your report can become a fighting document—a chance to point out your needs as facts reveal them. Finally, it is your best opportunity to tell all about your work, to appraise its accomplishments, and to study the reason for its failures. Properly prepared, reports become not an end to themselves, but a powerful means toward the objectives we wish to attain.

How well a message accomplishes its purpose is a true test of the effectiveness of the content. Words can be either an aid or a barrier to understanding. Words that are exact, appropriate, simple, clear, and direct promote a better understanding of the message.

Technical words have infiltrated the common language of society until people are finding it next to impossible to express their thoughts in a simple, effective, and understandable manner. In our work, technical words and phrases should be avoided unless the subject or occasion warrants their use. When such words or phrases must be used, they should be defined unless their meanings are well known.

Our communications can be more effective if we (a) select words that call attention to ideas; if we (b) select words that fit the subject, purpose, and tone of the message; if we (c) employ figures of speech appropriate to the context in which they are used; and if we (d) avoid stilted, freakish expressions such as the so-called gobbledygook that has infested our mother tongue.

Good communication is not “a one-way street.” It has three dimensions—up, down, and across. The “downward” path is, in general, well used, but unfortunately the “upward” and “across” paths are relatively untrodden. Effective coordination of any organization’s efforts depends on information traveling up and down the administrative lines as well as across lines of authority. An established pattern or plan for the exchange of information will permit the message to move step by step through the organization until it reaches the person or persons who can take the necessary action or make the necessary decision. Such a plan will help pinpoint individual responsibility, reduce error, and prevent misunderstanding. Furthermore, it will give each individual an improved picture of the work, accomplishments, and problems of those with whom he works.

Let us not forget that, actually, there is not such a thing as a “one-way” communication. An unanswered letter, failure to supply requested information, or failure to follow instructions, each send “silent messages.” These “silent messages” may be due to lack of interest, skill, or knowledge, failure to take time to understand the message, or other interests that distort the message. All of these “blocks” to good communications can be eliminated by willingness to learn, attention to the subject, and by applying one’s self to the task.

Group communications are important to bolster our understanding of mutual problems. These group activities, such as semiannual and annual conferences, committee projects, and training schools, may be utilized to pass along new information concerning developments in our chosen field; to discuss changes in existing policies and plans; or for the pooling of ideas to meet a common problem. To be effective, these conferences or group actions should be designed to draw equally from the ability and experiences of all participants. However, cer-

tain control must be exercised to prevent the discussions wandering too far from the established purpose of the meeting.

Here again, we can employ another medium of communication that is fast becoming popular in business and industry. There is an old adage that proclaims, "A picture is worth 10,000 words." Animated cartoons, film strips, and motion pictures have proven their effectiveness in business and industrial training programs. These can be used equally well in the field of weights and measures education.

Our discussion of communications would not be complete if mention was not made of the opportunity afforded us to inform those outside our organization of our activities. Newspaper articles, radio talks, TV appearances, addresses to school groups and business and professional clubs can aid us immeasurably in promoting public awareness of our responsibilities. Remember that people are most interested in things that concern them personally. Tell the story of your work in terms of public interest.

I can think of no better or easier method of "selling" weights and measures enforcement than to use the excellent films made available to us by the Office of Weights and Measures, National Bureau of Standards. These films in color and sound, emphasize the important role the weights and measures officials play in the economic life of the family and the community. We can and should take advantage of every opportunity to foster a better understanding of our work and to create respect for our office.

In conclusion, may I summarize briefly the primary principles of effective communications:

(1) Secure attention to your message by creating incentive—appeal to the four basic urges or "rewards": (a) social response, (b) security, (c) recognition, and (d) new experience;

(2) Have your message correct, definite, complete, and courteous;

(3) Use well-written reports as a means toward the objectives you wish to attain;

(4) Employ words that promote a better understanding of the message;

(5) Pay attention to the direction of your message. Remember the three dimensions—up, down, across;

(6) Eliminate the "silent messages," the unanswered request—the failure to "follow through";

(7) Avail yourself of the opportunities afforded by the group activities to develop a better understanding of mutual problems;

(8) Use every available opportunity to inform the public of your activities and to foster a better understanding of your role in the economic life of the community; and last, but probably most important,

(9) Never say or do anything that detracts from the sense of personal dignity that each individual possesses.

Good communications can lead us to a better understanding of our mutual interests, a uniform solution of our common problems, and can advance the cause of weights and measures enforcement beyond our fondest hopes.

DISCUSSION OF FOREGOING PAPER

MR. SANDERS: I think you implied that weights and measures officials, State, city and county, could profitably devote a part of their time to publicity and to other forms of public relations. Could you give us a little of the justification that a weights and measures official might be able to give to his superiors for devoting a part of his time to publicity?

MR. BOYD: I do not think that I can give you a complete answer. I might point out that in Indiana the Division of Weights and Meas-

ures is a part of the State Board of Health. The State Board of Health has cooperated with our Division in authorizing the purchase of the various weights and measures films. We have them in our Public Health Library. They are available on loan without charge, and use of them is sought. To the best of my knowledge, we have never been criticized for giving talks to groups. We have many school children and adults who visit the State Board of Health. We devote a part of our time to explain what each division does to protect the public, whether it be health, weights and measures, whatever it might be.

It takes very little time for a city or county official to appear at a Rotary Club or Kiwanis Club. I know of no time that we in Indiana have been criticized for our public education effort. We do not have a budget to cover such publicity, but we do have the complete cooperation of the Departments of Health and Education.

MR. SANDERS: You think, then, that this public relations effort makes better weights and measures by educating the public that you are dealing with and whom you are trying to protect?

MR. BOYD: There is no doubt about that. I think the more that the public knows about your work, the more they will appreciate you and the more they will respect you. I think it is part of your job to keep the public informed. All people are interested in weights and measures enforcement when they are told that the activity is for their protection.

Recently I read that the average American family might lose as much as \$100 a year through short weight. The public is interested in that sort of thing. Many organizations would welcome talks from a weights and measures official, but if they are not informed of your existence, they cannot come to you.

MR. FULLER: I want to add a couple of thoughts. I thought that talk of Mr. Boyd's was one of the best I ever heard on this subject. I want to mention a few methods we have found so very effective in getting ideas over to the public.

One is in connection with our county fair exhibit, which is authorized by our board of supervisors and which we make entertaining with colored slides and other things. But in connection with that the board authorizes the publishing of a little manual which we call "Weights and Measures for the Consumer, Are You a Smart Buyer," comprising about 10 pages, with illustrations on some of the pages. We have copies of this booklet at the Fair for the public to see, and everyone who is interested in it and would like to have a copy of it signs his name and address on a sheet. You would be surprised at the thousands of names and addresses we get that way. The booklets are mailed out to them afterwards. They go to the homes, where we know they are put to good use.

We also utilize at the Fair the device that many of you do—a free person-weighing scale. That is about the best way to get the public into the exhibit. While they are waiting in line to get weighed, they are bound to look over some of your exhibits. When they get their official weight, we give them a little slip, giving the weight, and on the back of the slip is printed a lot of information about the work of the department and how it is protecting them.

You might think most people who would get that little slip with their weight on it would glance at it and throw it away. During

one fair we weighed 70,000 people, gave out that many slips, and I do not believe we picked up a hundred of them around the grounds or outside. They took them home.

MR. BECK: Do you advocate, or do your weights and measures officials go out and give talks at Chambers of Commerce, Rotary Clubs, and so forth? Most of my sealers would balk at something like that, because most of them are just about as timid about making a speech as I would be. I wonder what your thinking is on that.

MR. BOYD: Mr. Meek prepared a series of papers on weights and measures that could be used by the city and county officials to work out their own talks before local groups. We highly recommend that they do make such talks. However, as you say, some of them are rather timid and they prefer not to do it. But we in the State office, particularly Mr. Meek, have had many requests for talks before coal dealers, before store managers, and similar groups. We would, of course, like to have more of these.

We have several folders that have been put out, one for scale owners, telling them how to care for their equipment, what to do, and what not to do. Our city and county men pass those out, as do our State men. It gives the retailer help. At any time that a local inspector would have a request to give a talk, we in the State division would certainly see that he would receive all possible assistance.

MR. SANDERS: On the matter of material for talks, I would like to remind the group that the Education Committee of the Conference has prepared a very excellent article which you could use as a paper, whatever portion you wanted, called "The Weights and Measures Story." We have them available. My association agreed with the Education Committee to reproduce the paper and make it available. If you want copies and write me, we will be glad to supply them.

MOISTURE MEASUREMENT IN THE GRAIN INDUSTRY

By LAWRENCE ZELENY, *Chief, Standardization and Testing Branch, Grain Division, Agricultural Marketing Service, U.S. Department of Agriculture*

(Presented by M. H. NEUSTADT, *Head, Standardization Section, Standardization and Testing Branch, Grain Division, Agricultural Marketing Service, U.S. Department of Agriculture.*)

Moisture content is one of the most important factors affecting the quality of grain. Since the amount of dry matter in grain is inversely related to the amount of moisture it contains, moisture content is of direct economic importance. A carload of wheat of 14 percent moisture content contains about 1,850 gallons of water. Much of the wheat marketed in the United States contains about 14 percent of moisture, although in the drier areas or in dry seasons the moisture content may be as low as 8 percent. At current prices the intrinsic value of a 55-ton carload of wheat of 8 percent moisture content would be about \$250 greater than that of a carload of the same weight of similar wheat containing 14 percent moisture. Unfortunately, such differences in intrinsic value are seldom reflected in actual market prices. Thus farmers and others may be tempted to water their dry grain to increase its weight.

Of even greater significance, however, is the effect of moisture on the keeping quality of grain. Dry, sound grain may be kept for

years if properly stored, but wet grain may spoil completely within a few days. It is not possible, however, to set precise moisture limits for the safe storage of grain or to predict accurately how rapidly it will deteriorate at any given moisture content, because various factors other than moisture have marked effects on storage behavior. Nevertheless, under practical storage conditions, moisture content is usually the principal factor governing the keeping quality of grain. Near the critical moisture levels small differences in moisture content make large differences in keeping quality. Suitable methods for determining moisture content are therefore of considerable practical importance.

BASIC METHODS

Methods for determining grain moisture content which are generally classified as basic or primary methods are relatively accurate, but in general are too time-consuming for most practical purposes.

Oven Methods

The most widely recognized methods for determining moisture in grain are based on drying known weights of grain in various types of ovens and calculating moisture content from the weight lost in the drying operation. These methods appear to be rather simple and direct and usually constitute the "basic" methods against which rapid, practical moisture-testing equipment is calibrated. Actually, however, all oven methods for determining moisture in grain are more or less empirical in nature, the results depending on the degree of subdivision of the material being tested, the time of drying, and the temperature and atmospheric pressure under which the drying is accomplished. In most biological materials, including grain, it is difficult if not impossible to remove all moisture by the application of heat without at the same time driving off small amounts of other volatile substances or causing decomposition of some of the constituents with the formation and release of moisture not initially present at such.

The difficulty encountered in removing all moisture from biological material, even when it is finely ground, seems to be due principally to the fact that the water is present in different forms. When an inorganic material such as wet sand is heated at 100° C. or higher at atmospheric pressure, the moisture is lost at a rapid and essentially uniform rate until the material is completely dry. In drying finely ground grain, however, a much longer time is required to remove the moisture, the rate of moisture loss decreases rapidly as the drying progresses, and the ultimate loss in weight differs with different temperatures employed for drying.

In biological materials such as grain, part of the moisture present appears to be tightly held or "bound" by powerful physical forces to proteins, high molecular weight carbohydrates, and perhaps other colloidal substances. This moisture, sometimes spoken of as "bound" water is much more difficult to remove than the "free" water. The tenacity with which water may be held to colloidal substances probably varies with the nature of the colloidal material and with the amount of water so held. Thus in the case of wet grain there are probably encountered all gradations between "free" water that is removed by heat as readily as the water from wet sand, and water

that is so tightly held that it can be removed only under conditions of temperature and pressure that may permit volatilization or decomposition of other constituents. For these reasons oven methods as well as most other "basic" methods for determining moisture in grain are actually empirical, and to obtain comparable results standard procedures that have been usually rather arbitrarily established must be followed precisely.

Air-Oven Methods

A method in which a weighed portion of finely ground grain is heated in an air oven for 1 hour at 130° C., and the loss of weight determined is widely used for determining moisture in cereal grains and is the basic method specified for grains other than corn in the official grain standards of the United States (22).¹ If the initial moisture content of the grain is in excess of 13 percent, a two-stage procedure is used in which a weighed portion of grain is partially dried to a moisture content of less than 13 percent before grinding, and the loss of weight in this preliminary drying is determined. The partially dried grain is then ground and a weighed portion of the ground material is dried for 1 hour at 130° C. In calculating the moisture content the moisture losses in both stages of the procedure must be taken into consideration.

Another commonly used air-oven method for determining moisture in grain provides for heating a weighed portion of the finely ground grain for 2 hours at 135° C. This method gives slightly higher results than the previously described method and is an official method of analysis for grain of the Association of Official Agricultural Chemists (1).

In addition to the conventional types of air oven, special types of air ovens are available which have built-in balances for weighing dried samples while they are still hot and without removing them from the oven. In some instances the balances may be used also for the initial weighings and are calibrated directly in terms of moisture percentage so that when the proper weight of sample is used no calculation is required.

Water-Oven Method

Under the official grain standards of the United States a water-oven method (22) is specified as the official basic method for the determination of moisture in corn. A weighted quantity of whole corn is dried for 96 hours at a temperature of 99° to 100° C. in a water-jacketed oven in which the water is maintained at the boiling temperature. The water oven is essentially an air oven except that it is heated by means of boiling water. Effective October 1, 1959, the water-oven method for corn will be replaced by an air-oven method (23).

Vacuum-Oven Method

One of the most widely accepted methods for determining the moisture content of grain is based on drying the finely ground grain at a temperature of 98° to 100° C. in an oven chamber maintained at a pressure of 25 mm. or less of mercury. Heating is continued until no appreciable further loss of weight occurs (usually about 5 hours).

¹ Numbers in parentheses refer to the appended references.

This method is one of the official methods of the Association of Official Agricultural Chemists for grain (1) and gives results in reasonably good agreement with the 1-hour, 130° C. air-oven method.

Drying With Desiccants

The moisture content of grain and other materials may be determined by placing a weighed portion of the finely ground material in a closed container with a relatively large quantity of an efficient desiccant. The desiccant chosen must have a lower vapor tension than the material being dried. The moisture in the material is gradually vaporized, and is then absorbed by the desiccant. Moisture content is determined by the loss in weight of the original material after it finally attains constant weight. Reducing and maintaining the atmospheric pressure in the container to a low level will greatly reduce the time required to complete the operation, but even when this is done the time required is too great for most practical purposes. However, in one of the official methods of the Association of Official Agricultural Chemists for determining moisture in grain, the finely ground material is held under vacuum in the presence of anhydrous sulfuric acid until constant weight is attained (1). One advantage of the method is that it does not involve the hazard of possible decomposition of organic material by heat. However, grain of high moisture content may decompose as a result of the action of molds and bacteria before the moisture content is reduced sufficiently to inhibit the growth of these organisms.

Toluene Distillation Method

One of the official methods of the Association of Official Agricultural Chemists (1) provides for boiling the finely ground grain in toluene in an apparatus that condenses the volatilized materials, collects the condensed water in a graduated tube and returns the condensed toluene to the boiling flask. The boiling is continued as long as any water accumulates in the graduated tube, and the moisture content of the grain is calculated from the volume of water condensed. Since the boiling point of toluene is 111° C., all substances that boil at or below this temperature, including all water that will be released at this temperature, are distilled. Also, since the water is measured volumetrically, no water-insoluble volatile material can be measured as moisture. A modification of this method has been adopted for corn by the wet corn milling industry.

Karl Fischer Method

In recent years considerable attention has been given to the method of Karl Fischer (8) for determining the moisture content of a wide variety of materials. The method depends upon the reaction of iodine with water in the presence of sulfur dioxide and pyridine to form hydriodic acid and sulfuric acid. Since the method is strictly stoichiometric, it is, theoretically at least, one of the most accurate methods for determining moisture. In applying the method to grain, the grain must first be finely ground and the moisture extracted with anhydrous methyl alcohol. Because of certain practical difficulties in its application, the Karl Fischer method has been used but little in

determining moisture in grain, although Fosnot and Hamon (9) have applied the method to wheat and barley. More recently Hart and Neustadt (11) have successfully adapted the method to all cereal grains and have used it to test the accuracy of official oven methods. Because of the technical skill required and the time-consuming nature of this analytical method, its usefulness is likely to remain quite limited, even though it is probably the most accurate method available.

PRACTICAL METHODS

Practical methods designed for the rapid routine determination of grain moisture content are for the most part secondary or indirect methods which must be standardized against one of the basic or primary methods.

Brown-Duvel Distillation Method

For many years moisture content was determined in the routine inspection of grain by heating a weighed portion of unground grain in oil. The moisture volatilized by this heating is condensed, then collected and measured in a graduated cylinder. The apparatus used for this purpose must be standardized to provide a definite amount of heat in a definite period of time. The method is highly arbitrary and the exact procedure to be followed must be established for each kind of grain in order to obtain results equivalent to those obtained by the applicable official oven method. The method was first proposed by Brown and Duvel (3) and the procedure to be followed for each kind of grain is described in detail in U.S. Department of Agriculture Department Bulletin No. 1375 (5).

The Brown-Duvel method has been largely replaced by electric moisture meters in the routine inspection of grain in the United States, but it is still used under various conditions of testing in which electric meters cannot be depended upon to give reliable results.

Direct Heating Methods

Various modified air-oven methods using special heating equipment have been devised to shorten the time required as compared with standard oven methods. In general these methods provide for heating the material to considerably higher temperatures than those employed in the usual oven methods. Heating may be accomplished by ordinary electric heating coils, by radiation from infrared radiators, or by means of a high-frequency, high-voltage field (4). In employing these methods and devices, it is customary to determine in advance the time of heating and the temperature or other adjustment of the equipment required for each type of material to be tested, in order to obtain results in reasonably good agreement with those obtained by one of the more basic methods.

Calcium Carbide Methods

Calcium carbide reacts readily and completely with water to form calcium hydroxide and acetylene gas. Parks (16) was the first to utilize this reaction as a basis for determining the moisture content of plant materials. An excess of calcium carbide is mixed with a definite weight of plant material. The moisture in the material being tested reacts with the calcium carbide and the acetylene gas formed escapes from the mixture. The moisture content of the material is

then calculated from the weight lost as a result of the escaped gas. A special balance for making the weighings was devised with which the final reading is made directly in terms of percent moisture. Although the method is theoretically sound, practical difficulties appear to have prevented any extensive use of it in the testing of grain.

A moisture-testing device is available in which the material to be tested is mixed with calcium carbide in a tightly sealed, heavy metal container equipped with a pressure gage. For any given type of plant material the pressure developed by the evolution of acetylene gas should be proportional to the moisture content of the material. This method and equipment is said to be in limited use for measuring the moisture content of grain.

Dichromate Method

A method for measuring the moisture content of fruits and vegetables based on oxidation of the organic material by potassium dichromate has been proposed by Launer and Tomimatsu (14). An excess of dichromate is used in the reaction and the part that remains after the oxidation is complete is determined by titration. A "dichromate factor" is established for each type of product to be tested and is based on results obtained by a standard oven method for determining moisture. Although the method is intended primarily for products of high moisture content, it was shown to be applicable to rice containing from 10 to 15 percent moisture (21). Presumably it could be used for other grains.

Methods Based on Relative Humidity Measurement

When grain is freely exposed to the air it will gradually lose or gain in moisture content until it reaches a moisture content level in equilibrium with the relative humidity of the air to which it is exposed. Likewise the interstitial air in unventilated stored grain will tend to become stabilized at a relative humidity in equilibrium with the moisture content of the grain. Thus after this equilibrium is established a measurement of the relative humidity of the interstitial air may be used as an index of the moisture content of the grain. Actually such relative humidity measurements may be better indexes of the keeping quality of grain than direct moisture-content measurements, since the activity of molds and other micro-organisms that develop on the surfaces of grain kernels and that are largely responsible for grain spoilage is probably more closely dependent upon the relative humidity of the surrounding air than upon the moisture content of the grain. It has been shown by Milner and Geddes (15), that the rate of mold development on grain is quite slow when the relative humidity is below 75 percent, but that rapid deterioration as a result of mold growth is likely to occur at ordinary temperatures if the relative humidity of the interstitial air is greater than 75 percent. For long storage the moisture content should be low enough so that the relative humidity is considerably below 75 percent, probably below 65 percent.

Wet- and dry-bulb thermometers have been used by Gaus, Shaw, and Kliever (10), to determine the moisture content of seed cotton prior to ginning by measuring the relative humidity of air drawn by suction from bulk lots of the product. Dexter (7) has applied the wet- and dry-bulb technique to small samples of grain and other agri-

cultural products, using saturated salt solutions rather than water on the bulb of the wet-bulb thermometer. Manufacturers of electric hygrometers are investigating the application of these devices to the measurement of moisture in grain and other products.

Ives (13) has made ingenious use of dew-point depression as a measure of relative humidity in a closed jar of grain and hence of the moisture content of the grain.

Certain inorganic salts, notably those of cobalt, undergo marked changes in color at different relative humidity levels as a result of differing degrees of hydration. Practical use of this phenomenon has been made by Solomon (19, 20) in estimating the relative humidity of air in small spaces and by Dexter (6) in estimating the moisture content and keeping quality of grain and other farm products. Although the accuracy of any such method is not high, its simplicity may make it valuable for farm use.

In order to translate relative humidity measurements into terms of grain moisture content, it is obviously necessary to know the relationship between relative humidity and grain moisture. This relationship differs for different kinds of grain, and to some extent among different lots of the same kind of grain probably because of the effect of hysteresis and of differences in the tenacity with which part of the water is held by colloidal constituents. Although various investigators have published data in respect to these relationships, there is a considerable amount of disagreement among the published reports. Perhaps the most thorough study of this subject is that of Hubbard, Earle, and Senti (12).

Electric Moisture Meters

Certain electrical properties of grain depend largely on its moisture content and have been used as the basis for a considerable number of devices for determining moisture content.

The possibility of determining the moisture content of grain by resistance measurements was first demonstrated by Briggs in 1908 (2). Using as electrodes 12-inch brass rods inserted into a jar of wheat, and measuring with a Wheatstone bridge the resistance of the wheat to the flow of current from an electromotive force of 17 volts, he found a linear relationship between the moisture content of the wheat and the logarithm of its resistance over the moisture range of about 11 to 16 percent. He also showed the effect of temperature on the electrical resistance of wheat.

In 1909 Zeleny (24) devised an electrical instrument for determining the moisture content of corn. Electrodes in the form of spaced metal points were pressed into the germs of individual kernels of corn. The two electrodes were of dissimilar metals so that with the corn kernels they formed a simple voltaic battery. The current produced depended upon the moisture content of the corn and was registered on a sensitive galvanometer. Thus no battery or other external source of current was required. In a later modification of the instrument a battery was added to the circuit and the electrodes were both made of the same metal, so that the galvanometer deflection became essentially a measure of conductivity of the corn kernel.

Although neither the Briggs nor the Zeleny devices were used extensively for practical purposes, they stimulated interest in electric grain moisture testing and were the forerunners of a considerable number of electric moisture meters that are now widely used in the

grain trade. Most of the modern meters are based on conductance or capacitance measurements.²

Conductance-Type Moisture Meters

In conductance-type moisture meters the grain is pressed between two electrodes connected in series with a suitable source of current and a galvanometer. A series of fixed resistors may be introduced individually into the circuit so that the full range of the galvanometer may be utilized for separate relatively narrow ranges in moisture content.

In one style of conductivity meter a weighed or measured portion of grain is pressed to a standard thickness between two electrodes in a small cylinder. In another style of meter, widely used in the inspection of grain under the official grain standards of the United States, the electrodes are in the form of corrugated steel rolls, one of which is motor driven. The grain, which need not be weighed or measured, is simply poured between the two rolls, which are accurately spaced with respect to each other, and which then rotate in opposite directions and subject the grain passing between them to high pressure.

Conductance-type moisture meters are relatively easy to keep in proper adjustment and to maintain in satisfactory alignment with one another. They are likewise very rapid in operation, particularly the style of meter using motor-driven electrodes. One of the principal disadvantages of conductance meters is that their accuracy is dependent in large measure upon a normal distribution of moisture within the kernels of grain. Grain that has recently been dried artificially gives low readings since the surfaces of the kernels are abnormally dry in respect to the moisture content of the grain as a whole. Likewise freshly tempered (moistened) grain gives high readings because of an excess of surface moisture. Mixtures of wet and dry grain and grain that is musty or sour also often fail to give correct readings with conductance-type meters. Furthermore, conductance meters are quite limited in the range in grain moisture content they will measure. At moisture levels below about 7 percent, moisture in grain appears to be so tightly "bound" that it contributes very little to the conductivity, hence no satisfactory readings may be obtained at such levels. At moisture levels above about 23 percent, grain conductivity is so great it increases but little with further increase in moisture content. At these moisture levels, therefore, conductance meters are subject to serious errors.

In spite of the many shortcomings of conductance-type grain moisture meters, they will, if properly calibrated and operated, give very satisfactory results with the normal run of commercial grain.

Capacitance-Type Moisture Meters

Since the dielectric properties of grain depend largely on its moisture content, the capacity of a condenser in which grain is the dielectric will vary in accordance with the moisture content of the grain. This principle has been utilized in the development of a number of different grain moisture meters. In some of them the circuits are so

² A partial list of moisture-testing devices for grain and related commodities is maintained by the author and can be obtained upon request.

designed as to utilize the change in impedance resulting from the change in capacitance as a means of measuring the moisture content. Impedance decreases with increasing grain moisture content as a result of the effect of the moisture on the dielectric properties of the grain.

Moisture meters of this type have certain inherent advantages over conductance-type meters. They are less subject than conductance meters to errors resulting from uneven moisture distribution within or among the kernels of the grain being tested, and to errors associated with mustiness or sourness of grain. They are also capable of testing grain over a wider range of moisture content than are conductance meters. In spite of these advantages, it has never been conclusively proved that capacitance-type moisture meters are capable of greater overall accuracy in testing the normal run of commercial grain than are conductance meters. Capacitance meters should be particularly useful, however, in testing freshly dried or tempered grain, mixtures of wet and dry grain, out-of-condition grain, and grain of very high or low moisture content.

Good replicability of results is somewhat more difficult to obtain with capacitance meters than with conductance meters, particularly in the higher moisture ranges. This appears to be due to a degree of nonuniformity in the packing and orientation of the grain kernels when they are dropped into position between the plates of the condenser. Another serious practical disadvantage encountered with many capacitance moisture meters is the difficulty in keeping them in proper adjustment, particularly in maintaining accurate alignment among individual instruments. Uniformity of results obtained among many different inspection offices is of paramount importance in routine grain inspection work. Satisfactory uniformity has been more easily attained with conductance than with capacitance meters. Marked improvements, however, are being made in capacitance meters both in respect to precision in manufacture and to means for maintaining proper adjustment and alignment.

Nuclear Magnetic Resonance Method

A relatively recent development is the observation of Shaw and Elsken (18) that the magnetic resonance absorption due to hydrogen nuclei can be used to measure the moisture content of various materials. Equipment for determining moisture content by means of this principle is described by Rubin (17). Although this method is rapid and may be the most accurate of the various secondary methods for determining grain moisture content, the present cost of the essential equipment would prohibit its adoption for most routine use.

MAINTAINING ACCURACY IN PRACTICAL MOISTURE TESTING

Since moisture content is an important factor in the marketing of grain, it is necessary that the greatest possible accuracy be maintained, consistent with practical operations, in the determination of moisture. Failure to maintain reasonable accuracy may result in injustices in grain marketing transactions and in spoilage of grain during shipment and storage. Several State governments are exercising or are planning to exercise some degree of control within their respective States over all grain moisture-testing operations performed in connection with the marketing of grain. The basic plan usually con-

templated is to check periodically the accuracy of all moisture-testing devices used within the State for this purpose and to approve or license the use of only those that meet or that are adjusted to meet certain standards of accuracy. For reasons that will be outlined below a program of this kind is much more complicated than it might seem to be. It cannot be considered comparable with the task of checking the accuracy of scales for determining weight or of containers for measuring volume.

Nearly all practical grain moisture-testing devices are calibrated against basic oven methods, usually those prescribed by the Official Grain Standards of the United States. It might seem, therefore, that a logical system for a State to use in checking the accuracy of practical moisture-testing devices would consist simply of using samples of the different grains, the moisture contents of which have been established accurately by official oven methods. Under such a system those devices, and only those, giving results in agreement with the established moisture content within a specified tolerance would be acceptable. This system should prove to be reliable when it is applied to the numerous devices available for determining the moisture content of grain by distilling the moisture and measuring the volume of condensed water so obtained, or by evaporating the moisture rapidly by heat produced by heating coils, infrared radiation, or high-frequency, high-voltage fields, and then determining the weight loss. All of these devices are potentially capable of yielding fairly accurate results consistently, and failure of the devices to yield results checking quite closely with official oven methods is immediately indicative of mechanical, electrical, calibrational, or operational defects. Devices falling into this category, however, are not widely used in practical grain operations because they are much slower and less convenient to use than electric meters.

Electric grain moisture meters are, and will no doubt continue to be, widely used because of their great convenience, regardless of the fact that they are at times somewhat inaccurate. These meters do not in reality measure grain moisture content directly but, rather, measure certain electrical properties of grain that are related to moisture content. Since many variable factors other than moisture content affect these electrical properties, electric meters are subject to certain inherent inaccuracies which are sometimes much greater than is generally realized. Reliable calibration of any make and model of electric meter must therefore be based on tests made on large numbers of samples of each kind and sometimes each class of each kind of grain covering wide ranges in moisture content and area of production, and produced during several crop years. Each sample must be tested by the appropriate basic method and the corresponding meter reading ascertained. From the data so obtained the best possible calibration is derived. Although the resulting calibration chart, table, or scale should make it possible to determine grain moisture content accurately *on the average*, tests on individual samples of grain may be in error by considerable amounts. Frequently all samples of one kind of grain from a particular limited area of production during a particular season or part of a season will show uniformly high or low test results when tested by a particular kind of moisture meter, even though the meter is properly calibrated for the crop as a whole and properly operated. The unknown variable factors which are

responsible for this phenomenon might not affect the readings of other types of electric meters in the same way.

In any program that may be developed for checking the accuracy of electric grain moisture meters, the above-mentioned types of apparently unavoidable and unpredictable errors in moisture determination must be considered. If check tests are to be based on grain samples of known moisture content, it would be necessary to use very large numbers of samples to minimize the possibility of arriving at false conclusions resulting from abnormal characteristics of the samples chosen. Checking moisture meters by means of grain samples of known moisture content should provide the most reliable meter inspection system if the agency performing this inspection is prepared to use a sufficiently large and diversified group of grain samples for this purpose. If only a small number of samples is used, the chances of arriving at false conclusions in respect to the reliability of meters are relatively great.

Although the task of inspecting meters properly by the use of samples of known moisture content would usually be considered impractical for the reasons stated above, we believe that there may be a more practical approach to the problem which would utilize, as far as possible, information already known about many of the meters as well as certain facilities that could be made available by the manufacturers or distributors of the meters. The suggested plan would be broken down into the following five phases:

1. Ascertain which makes and models of meters are potentially capable of determining grain moisture content within the tolerances desired. No other makes or models would be considered acceptable until suitable evidence of their reliability could be obtained.

2. Make certain that reliable conversion charts, tables, or scales for these meters have been provided and that they are actually being used.

3. Obtain for use by the State agency responsible for the meter inspection one meter of each make and model that is considered acceptable and that is actually being used in the State.

4. Make sure that these "standard" instruments maintained by the State will give readings essentially identical with those of "master" instruments of the same makes and models that are usually maintained by the manufacturers or distributors. This can be accomplished only through an exchange of grain samples between the State and the firms or agency maintaining the "master" instruments. A few samples of each kind of grain will usually suffice for this purpose and no knowledge of the actual moisture content of the samples is necessary. Checks of this kind should be made at rather frequent intervals.

5. Perform the inspection of moisture meters throughout the State by checking the moisture content readings obtained by these meters against those obtained by the "standard" meters of the same makes and models maintained by the State agency. Here again a few samples of grain are sufficient and no knowledge of the exact moisture content of the grain is necessary. Each "standard" meter must be used only for checking other meters of the same make and model. In each instance comparative tests with the two meters should be made on the same day if possible.

The above-described plan, if properly put into effect, should make it possible to maintain within a State a reasonable degree of accuracy in electric grain moisture testing. It should provide a high degree of uniformity of results among meters of the same make and model. It should also provide for satisfactory *average* agreement among all approved makes and models of meters. The plan cannot be expected, however, to eliminate occasional fairly wide differences in results obtained among different makes or models of meters or occasional rather serious inaccuracies in results obtained by any make or model of meter.

This method of maintaining grain moisture-testing uniformity as well as a reasonable degree of accuracy is essentially that used by the U.S. Department of Agriculture. A single make of conductance-type moisture meter is used almost exclusively by licensed grain inspectors in the inspection of grain under the Official Grain Standards of the United States. By means of frequent exchanges of samples the meters in 47 grain supervision offices and suboffices of the Department are kept in almost perfect alinement with a "master" instrument maintained at Chicago. In a similar manner the meters used by licensed inspectors at 325 grain inspection points throughout the country are kept in alinement with the meters at their respective supervision offices. Thus all of the meters are kept in alinement with the master machines at Chicago. This phase of the program maintains good uniformity in moisture testing throughout the country but has little to do with insuring the accuracy of the moisture values obtained.

To insure the greatest possible accuracy the conversion tables that have been established to convert meter readings into moisture percentages are under constant surveillance by the Department through a carefully planned and continuous system of checking meter readings for all grains against moisture percentages obtained by the official basic oven methods. In many instances the relation between moisture content and electric properties is found to undergo a progressive change from year to year as a result of the introduction of new varieties of grain and new methods of harvesting and handling. These changes must be carefully followed in order that the conversion tables may be revised when necessary.

This two-phase procedure used by the U.S. Department of Agriculture provides a satisfactory degree of uniformity in electric grain moisture testing among licensed grain inspectors and as great a degree of accuracy as can be attained with the type of equipment used. Greater accuracy in practical work can be attained only through the further perfection of electric meters or the use of other more accurate methods of testing. Manufacturers of electric grain moisture meters are making considerable progress in improving their equipment but the extent to which the accuracy of electric meters can be improved may be limited by inherent sources of error that may be very difficult to eliminate.

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MR. HARRIS: In the use of the moisture meters, is it sufficient to run a moisture test on a single sample of grain, or should several samples be run and the result be the average of the readings thus obtained?

MR. NEUSTADT: If a conductivity-type machine is being used, a single sample should be adequate; if a capacitance-type (dielectric) is being utilized, we would suggest that several samples be run through the machine.

MR. HARRIS: We have noticed that, when a sample of grain is tested in a moisture meter one day and then sealed and tested again a day later, a difference of as much as $\frac{1}{2}$ percent in the moisture content is indicated, with the percentage normally lower for the later reading. Which is correct?

MR. NEUSTADT: That would be difficult to answer. As you know, the standards provided by the Grain Division of the U.S. Department of Agriculture are based on determinations by the air-oven method or any other method that gives equivalent results. Unless the results you described are checked against the oven method, you would have no basis for determining which is correct.

MR. HARRIS: Then is it possible that the farmers are being paid for their grain on the basis of a moisture test in which there exist several assumptions?

MR. NEUSTADT: Electric moisture meters are simply rapid, practical methods of measuring moisture. The results from such methods cannot be absolutely relied upon.

MR. HARRIS: I noticed a press release from the U.S. Department of Agriculture dated April 10 that announced certain changes in the conversion charts for a particular type moisture determining machine. Not quite one month later I read where the Department had postponed the use of the new charts. Can you explain this for us?

MR. NEUSTADT: Yes. Although scientifically it had been proven that the conversion charts should be altered, pressures were brought to bear on the Department of Agriculture to rescind the published change. The pressures emanated generally from the producers of grain.

MR. HARRIS: You undoubtedly are aware that this Conference has gone on record requesting the U.S. Department of Agriculture and the National Bureau of Standards to cooperate in the development of accurate moisture measuring devices and techniques and also of equipment and procedures for testing such devices. This position also has been taken by the National Association of State Departments of Agriculture. Could you inform us of any developments or plans for developments along these lines?

MR. NEUSTADT: I think Mr. Jensen of the National Bureau of Standards has been working along these lines and is in a better position to answer that question.

MR. JENSEN: It has been the position of the National Bureau of Standards that the measurement of moisture in grains is an area of authority of the U.S. Department of Agriculture. The National Bureau of Standards might be able to make technical contributions

in the area, but will await an official request from the Department of Agriculture. It must be made clear that the effort of the Bureau will be limited by the funds that are available for that purpose.

MR. R. E. MEEK: I should like to emphasize the importance of this matter to the States. In Indiana a bill has been introduced in the General Assembly on at least two occasions that would place the burden of responsibility for the accuracy of moisture-measuring machines on the Division of Weights and Measures. Because of our lack of technical information, I have felt that such responsibility could not be properly met and discouraged the enactment of the legislation. We are hopeful that the Federal Government will be able to develop and make available to us such devices and techniques as are necessary.

I have been concerned that perhaps too much emphasis is being placed on the moisture-measuring devices and too little on the method of obtaining the samples of the grain that are being tested. Would you please give us your opinion on the subject of sampling?

MR. NEUSTADT: Undoubtedly proper sampling is an important consideration in moisture testing. However, discrepancies can and do occur when the same sample is tested over and over again. You can take a 250-gram portion of a sample of wheat and measure the moisture content of that on one of the dielectric-type meters several times over a period of several weeks, keeping the sample secured in a sealed can between tests, and find substantially different readings.

MR. MEEK: My point was that the improper taking of samples from a shipment of grain could cause definite inaccuracies as to the moisture content of the entire shipment. I am wondering if those in the grain trade are actually aware of the importance of proper sampling techniques.

MR. NEUSTADT: If sampling is done by licensed inspectors who are supervised by the Department of Agriculture as to the manner in which they take samples, I believe the sampling will be proper.

MR. MEEK. I am concerned with moisture measurement at buying stations throughout the country, where I believe the inspectors are not licensed by the Department.

MR. NEUSTADT: You are quite right. Substantial deviations in sampling and measuring techniques may occur at such elevators.

MR. HARRIS: This point I should like to make clear. Not all of the grain traders or grain inspectors come under the supervision of the U.S. Department of Agriculture. Our primary interest is in the accuracy of sampling and of moisture measurement. We presently do not have satisfactory means for checking either, and we know that both affect the dollars paid the farmer for his grain.

MR. F. F. THOMPSON: If grain is shipped from California through the Midwest and to the East Coast, and samples are taken along the route, how much difference would occur in the moisture measurement of those samples?

MR. NEUSTADT: If the samples are properly taken and truly representative, the measurement should not deviate by more than two-tenths percent when tested by the official method, provided that the lot itself has not changed in moisture content in transit.

REPORT OF THE CHAIRMAN OF THE WEIGHTS AND MEASURES ADVISORY COMMITTEE

By A. T. McPHERSON, *Associate Director for Engineering,
National Bureau of Standards*

The Weights and Measures Advisory Committee met at the National Bureau of Standards in Washington, D.C., on February 26, 1959. The Committee now includes the following individuals: P. C. Brinkley of Virginia; C. M. Fuller of Los Angeles County, California; Dr. L. J. Gordon of Denison University; L. T. Gustafson, Creamery Package Manufacturing Company; R. E. Meek of Indiana; and W. A. Scheurer, Exact Weight Scale Company. All members were present for the meeting. Dr. A. T. McPherson, Associate Director for Engineering of the National Bureau of Standards, served as chairman. The committee's report to the Director of the Bureau included comments and recommendations on the following matters:

1. *Publication Policy of the Office of Weights and Measures*

The committee was asked to consider the possible need for modification of the publication policy of the National Bureau of Standards Office of Weights and Measures to provide for the review and endorsement of some of its publications by the National Conference prior to their issuance by the Bureau. Extensive discussion of the feasibility of such an arrangement and of its possible advantages and disadvantages led to a unanimous recommendation that the Office of Weights and Measures publication continue as in the past.

This recommendation was discussed by the Director with the Executive Committee at its meeting on Monday.

2. *NBS Training Program*

The committee was pleased to learn that good progress has been made toward establishment of a weights and measures training facility at the Bureau as recommended in its last report. Appreciation was expressed for the excellent assistance of Office of Weights and Measures staff members in the planning and conduct of State and local training programs. The committee indicated that these training programs have become an important and effective tool in weights and measures administration. Continued strengthening of all OWM training activities was urged and the hope was expressed that participation in State programs will continue insofar as feasible after completion of the new training facility at the Bureau.

Since the meeting of the committee I am pleased to report that the Bureau's Office of Weights and Measures has been relocated on the Bureau grounds, and space for a training laboratory has been provided. This facility will be used principally for the training of supervisors and training officers and thus will extend the effectiveness of this phase of Bureau assistance. On-the-spot technical training schools will continue to be held to the limit of staff availability.

3. *Motion Picture Program*

The committee reported that the motion picture film "Assignment—Weights and Measures," which was produced by the Bureau

in cooperation with the National Conference, has been well received and is an effective device for informing the public concerning weights and measures activities. The committee urged the Bureau to continue its film production program and recommended that public information films and those directed toward the training of weights and measures officials receive equal emphasis. In particular, the committee suggested that a public information-type film be produced to show a typical weights and measures official at his work including the detection of offenders as well as the more pleasant aspects of the work.

Pursuant to this recommendation, plans for motion picture production have been included in the program of the Office of Weights and Measures for the new fiscal year beginning July 1.

4. State Standards

The committee was pleased to learn that progress has been made toward the development of prototypes of the new State Standards which the Bureau proposes to recommend and perhaps furnish to the States if funds are made available. Hope was expressed that this program can go forward as planned. It was the opinion of the committee that the States should be required to indicate their intention and ability to utilize the new standards effectively. For this purpose, the committee suggested that the Office of Weights and Measures develop a set of minimum requirements to be met by State offices before receiving the new standards.

Since the meeting of the committee, good progress has been made in the selection of a suitable alloy for mass standards and in the development of specifications for the construction of these and other standards.

5. National Conference

Members of the committee were invited by Mr. Bussey to offer suggestions for improvement of the National Conference program. In discussing this subject, the committee called particular attention to the value of NBS sponsorship of the Conference and commended the Office of Weights and Measures for the continuing high quality of the programs which have been arranged. It was the expressed opinion of the committee that much of the effectiveness and stability of the National Conference has resulted from the leadership and guidance provided by the Office of Weights and Measures.

6. Consumer Information

The chairman reviewed for the committee the changing and expanding scientific requirements upon the National Bureau of Standards which have necessitated a gradual curtailment of the Bureau's direct services to the general public. Members of the committee indicated their understanding of the many demands upon the Bureau, but urged that its withdrawal from the consumer information field not extend to the area of weights and measures. It was noted that the committee considers consumer education to be vital in securing uniformity in weights and measures laws and methods of inspection.

The chairman emphasized that the Bureau renders many services to the consumer through its services to science and industry. These services, though indirect, are nonetheless real. Some of the standards

issued by the Bureau which touch nearly every household and community are the standards for fading, the standards for kitchen and bathroom furniture, the familiar standard yellow color for school buses, and the standard colors for signal lights.

7. Technical Matters

The committee visited the laboratories of the NBS Mass and Scale Section and heard an interesting account of the section's current activities. Mr. H. S. Peiser, the recently appointed Chief of the Mass and Scale Section, was commended for his stimulating discussion of the work which is under way and planned.

Discussion by the committee reaffirmed the need for NBS assistance on certain technical problems which have been reported previously, such as axle load weighing and commercial measurement of liquid fertilizers. The committee was advised that priority work associated with the Nation's missile program has limited the effort which can be devoted to these problems, but that it is the intention of the Bureau to initiate suitable studies when additional staff and funds can be obtained.

The committee expressed its concern with the apparent scope and financial implications of the problem of determining the moisture content of agricultural commodities. It urged the Bureau to offer all appropriate assistance to the Department of Agriculture in a study of equipment and procedures for determination of moisture content of grains and other commodities. In addition, the committee suggested that this matter be brought to the attention of the Association of State Departments of Agriculture by Commissioner Brinkley. Mr. Brinkley has reported that this matter has been taken up by that association. Activities of the U.S. Department of Agriculture have just been reported to you by Mr. Neustadt.

The recently announced agreement to adopt an international yard and pound was reviewed with the committee. The members were gratified to learn that both technical and legal implications with respect to commercial standards have been studied by the Office of Weights and Measures.

8. Other Items

The committee was favorably impressed with the work being done by Mr. R. W. Smith on the Weights and Measures Archival Library. It was noted that the Bureau is most fortunate in this undertaking to have the benefit of Mr. Smith's extensive knowledge of the field.

The committee welcomed the opportunity to meet briefly with Mr. George Morrow and to learn of the study of scientific activities of the National Bureau of Standards being made by a Special Advisory Committee to the Department of Commerce. It also enjoyed a short discussion with Dr. A. V. Astin, Director of the Bureau, concerning some of the matters considered during the meeting.

In submitting its report, the Weights and Measures Advisory Committee expresses appreciation for the opportunity to present its views on the various matters which were discussed. All members indicated their willingness to meet with the Director of the Bureau for additional consultation if needed.

MR. SCHEURER: I should like to go on record, as a member of the Weights and Measures Advisory Committee, that I sincerely do hope that no change will be made in the publication policy of the National Bureau of Standards as it relates to weights and measures publications.

DR. GORDON: I think it should be made clear that the members of the Advisory Committee were not opposed to the additional imprint of the National Conference on Weights and Measures on weights and measures publications of the Bureau. The committee was very strong in its recommendations that Bureau sanction of such publications be continued. As far as I know, there have been no complaints from any representatives of States, counties, and cities that the Bureau was operating in an area that should be reserved to them. It has been their feeling that the publications of the Bureau have been very helpful and very desirable.

DR. MCPHERSON: I should like to make it quite clear that the recommendation in question was that publications dealing with matters outside the field of measurement be treated just the same as are series of publications on protection from the hazards of radiation. These publications are printed by the Government Printing Office as circulars of the National Bureau of Standards. The title page bears the statement "Recommendations of the National Committee on Radiation Protection" and the preface carries a statement as to the makeup of the national committee. We are proposing similar treatment for publications dealing with weights and measures administration as distinguished from those dealing with weights and measures technology. The former would be issued as publications of the Bureau and, in addition, would carry the caption "Recommendations of the National Conference on Weights and Measures" and the preface would contain appropriate acknowledgments and a description of the means by which the document became a recommendation of the Conference.

As I understand the recommendations of the Advisory Committee and the recommendations of this Conference as indicated by its support of the report of the Executive Committee, it is the unanimous opinion of the committee and of the Conference that weights and measures publications be issued as publications of the National Bureau of Standards without reference to the National Conference. This is a matter which the Director of the Bureau has instructed me to discuss with the Director of Publications at the Department of Commerce. Our decision must be based on the enabling statute of the Bureau, Public Law 619, passed in 1950, and interpretations of this statute by the Department of Commerce.

I can assure you that your unanimous recommendation will be reported and will be given serious consideration.

AFTERNOON OF WEDNESDAY, JUNE 10, 1959

—NO BUSINESS SESSION—

Tours of the Agricultural Research Laboratories, U.S. Department of Agriculture, Beltsville, Md., and of the laboratories of the National Bureau of Standards were conducted during the afternoon for many of the delegates of the Conference.

**FOURTH SESSION—MORNING OF THURSDAY,
JUNE 11, 1959**

(J. P. McBRIDE PRESIDING)

**REPORT OF SPECIAL COMMITTEE ON TRADING IN GRAINS BY
WEIGHT**

Presented by G. L. JOHNSON, *Chairman, Director, Division of Weights
and Measures, Department of Agriculture, State of Kentucky*

The National Conference on Weights and Measures has for many years fostered a move that would abolish the unit "bushel" as the basic unit in the trading of grains. This is a logical and economical move, since the real dry measure bushel has not been used in the grain trade since the advent of multiple lever scales. For many years there existed a standing committee of the Conference to which was assigned this particular responsibility. That standing committee made its final report and recommendations, which were adopted by the Conference, and was abolished in 1957. The responsibilities of the committee were reassigned to the Conference Committee on Laws and Regulations.

In 1958, on recommendation of the Committee on Laws and Regulations, the Conference established a new special committee in this area with directions that the special committee "consider and develop ways and means to expedite the transition" to changing over to the hundredweight as the basic unit of measurement in the grain industry.

During its annual meeting, held in Madison, Wis., September 29 to October 3, 1958, the National Association of State Departments of Agriculture adopted the following resolution on the subject "Standard Weight for Grain":

Whereas, all commercial feed is formulated on the basis of hundredweight; and

Whereas, flour and meal are milled on the basis of pounds of hundredweight; and

Whereas, the substitution of one grain for another on a pound-for-pound basis is used in the formulating of feeds and the feeding of animals; and

Whereas, grain is weighed in hundredweights and converted mathematically to bushels for purposes of making payment in normal channels of trade; and

Whereas, all transportation charges on grain are made in terms of hundredweight;

Now, therefore, be it resolved, that the National Association of State Departments of Agriculture, assembled at its 40th Annual Convention at Madison, Wis., September 29 to October 3, 1958, through its Executive Committee, should encourage the grain trade, as well as the State and Federal Governments, to adopt the hundredweight as the basic unit for trading in grains; and

Be it further resolved, that a National Committee for Trading in Weight be formed to coordinate all of the various groups' efforts in achieving this objective of a proposed standard.

Your special committee endorses this action by the National Association of State Departments of Agriculture and is in agreement that this is the proper national body to pursue the transition.

Your committee recommends that the National Conference on Weights and Measures keep in touch with the situation through its Committee on Laws and Regulations and that the Conference offer its facilities in aid of the transition.

The committee recommends that the Special Committee on Trading in Grains by Weight be abolished.

This majority report was not unanimously agreed to, one member dissenting; therefore, in accordance with the provisions of the "Organization and Procedure" of the Conference, a minority report has been prepared by Mr. Erling Hansen of Minnesota and is appended.

G. L. JOHNSON, *Chairman*

G. W. BAY

RALPH MAGOFFIN

R. C. HUNGATE, *Consultant*

A. T. MCPHERSON, *Consultant*

W. S. BUSSEY, *Secretary*

MINORITY REPORT OF SPECIAL COMMITTEE ON TRADING IN GRAINS BY WEIGHT

As a member of this committee I would like to submit a minority report. Minnesota has the largest cash grain market in the world, the Minneapolis Grain Exchange, and is the headquarters of some of the largest grain and milling firms in the United States.

The bushel is favored by the Minneapolis Grain Exchange and by the great majority of its members. Many large firms, such as Cargill, Inc., General Mills, Inc., Archer-Daniels-Midland Co. and F. H. Peavey & Co., have gone on record favoring the bushel. Surely, they would not have done so without good reason.

Most grain companies admit accounting procedures should be more simplified under the hundredweight system. However, other considerations overshadow the savings in time and effort of the accountants.

The bushel is two things—a measure of volume and a measure of weight. The "volume" bushel is defined as a dry measure containing 2150.42 cu in. The "weight" bushel has been so designated by the United States Government in establishing the per bushel weights of grain—wheat, 60 lbs; barley, 48 lbs; oats, 34 lbs, and rye and corn, 56 lbs.

A bushel of grain at the specified test weight will occupy approximately a bushel of space. Changes in test weight will cause slight variations in the amount of space grain will occupy. However, even taking into consideration the variations caused by test weight, there is a close correlation between bushels and space requirements, regardless of what grain is being considered. In other words, the bushel is the *common denominator* for all grains.

The "hundredweight" is a measure of weight only and has no relation to volume. Since elevator operation is a business dealing in space or volume the trade objects vigorously to all attempts to change from the "bushel" system, which gives both volume and weight, to a "hundredweight" system which gives weight only.

An elevator has a definite volume capacity or storage space. Space is essentially what an elevator operator is selling when he issues a storage receipt. The use of the "bushel" in handling and storing grain facilitates charging the same amount for a given amount of space whether the space is used for wheat or corn or oats. Use of the "bushel" also facilitates figuring storage requirements and available capacities.

The Minnesota Railroad and Warehouse Commission has gone on record opposing any legislation or directives that would make this change mandatory. The heart of the northwest grain country has four

States—Montana, North Dakota, South Dakota, and Minnesota with laws relating to the handling of grain by the bushel, and in each State new laws would have to be passed by each legislature to accomplish this proposed change.

ERLING HANSEN,
Member Special Committee on Trading In Grains by Weight

(On motion of the committee chairman, seconded from the floor the majority report of the Special Committee on Trading in Grains by Weight was adopted by voice vote.)

REPORT OF THE COMMITTEE ON NOMINATIONS AND ELECTION OF OFFICERS

Presented by R. E. MEEK, *Chairman, Director, Division of Weights and Measures, State Board of Health, State of Indiana*

The Nominating Committee submits the following report, including nominations for office in the National Conference on Weights and Measures to serve during the ensuing year or until such time as their successors are elected.

Consideration was given by the committee to several factors in the selecting of nominees for office. Such considerations were geographical distribution, attendance records, Conference participation, and interest in promoting weights and measures.

The Nominating Committee now submits to the Conference the following nominations for office in the National Conference for the ensuing year:

For Chairman: H. E. CRAWFORD, of Jacksonville, Fla.

For Vice Chairmen: R. M. BODENWEISER, of Mercer County, N.J.; H. N. DUFF, of Colorado; J. I. MOORE, of North Carolina; W. E. SHEEHY, of Fairfield County, Conn.

For Treasurer: C. C. MORGAN, of Gary, Ind.

For Chaplain: RALPH MAGOFFIN, of South Carolina.

For members of the Executive Committee: The officers, *ex officio*, and A. T. ANDERSON, of Cambridge, Mass.; G. W. BAY, of Missouri; J. M. BOUCHER, of the District of Columbia; R. A. FINDLAY, of Alaska; J. W. D. HARVEY, of Georgia; J. F. MADDEN, of New York; M. L. RICE, of Richmond, Va.; H. D. ROBINSON, of Maine; A. D. ROSE, of Kern County, Calif.; J. D. WALTON, of Dallas, Tex.

R. E. MEEK, *Chairman*

J. P. LEONARD

A. J. MAYER

H. J. McDADDE

R. W. SEARLES

C. J. WILLIS, JR.

(The report of the Committee on Nominations was adopted by the Conference and the officers were elected by (1) a motion, adopted unanimously by voice vote, to close the nominations, and (2) the unanimous adoption, by voice vote, of a motion by Mr. Powers to the effect that the Conference Secretary be instructed to cast a single ballot for the nominees selected by the committee.)

WEIGHTS AND MEASURES IN ALASKA—THE 49TH STATE

BY R. A. FINDLAY, *Inspector, Division of Weights and Measures, Department of State Police, State of Alaska*

To understand the problems of weights and measures enforcement in Alaska as it differs from those of the other 48 States—or I should say 49 now that Hawaii has been admitted to the Union—one must first have a general knowledge of Alaska in relation to its size, population, and transportation. First then, I will give you a brief outline of our State and the conditions we encounter in enforcing weights and measures supervision.

Alaska is a vast territory which covers an area of 546,400 square miles with a coastline of 33,904 miles. This area is more than twice the size of the largest State in the Continental United States, and our coastline exceeds the combined total of all the States. The southern tip of the State's panhandle is 750 miles north of Seattle; the State adjoins Canada on the east and extends north to the Arctic Ocean and west to the Bering Sea—at one point only 2½ miles separates Big Diomed Island of Alaska from Little Diomed Island off the coast of Siberia, a part of Russia. If you were to fly by commercial airline from Ketchikan, the southernmost part of the State, to Point Barrow on the coastline of the Arctic Sea or to Wales on the Bering Straits, actual flying time would exceed 8 hours. You would experience climatic conditions from a possible 60° above zero to a possible 40°–50° below zero during the winter months. Contrary to popular belief, Alaska is not a field of ice and snow. In the interior and southern parts of the State we experience conditions very similar to those you would find in your own State. Around the Fairbanks area, in the summer months the temperature rises to 90° and daylight lasts for 19 to 23 hours.

Alaska's population is estimated at 210,000, figuring a little more than 2 square miles for each resident. In summer months construction workers, fishermen, and tourists increase the population by another 100,000.

Costs of living are much higher than those in the other States. The latest figures show Juneau prices 21.4 percent and Anchorage prices 35.2 percent higher than Seattle prices, Fairbanks was rated 45.4 percent and Nome 49.9 percent above Seattle. With the cost of living at such a high peak, weights and measures officials and representatives of industry can readily understand the importance of weights and measures supervision in Alaska to protect the public against unfair practices.

Our weights and measures supervision has been a division of the State Police with just one inspector to handle all the work of testing, supervision, and enforcement of regulations. As you look at the map of Alaska you may wonder how just one man is able to travel over this vast area and still control and enforce the regulations required of us. First then, our police force is made up of some 50 officers stationed in headquarters of the larger cities or in outposts in the less-populated areas. This personnel, in effect, has supplied the weights and measures inspector with 50 or more deputies to assist in weights and measures enforcement. The officers do no actual testing of equipment but do help by handling preliminary complaints of violations, which are forwarded to the inspector for investigation. They advise

merchants and the public of the weights and measures regulations and in many instances have witnessed the breaking and resealing of equipment that needed repair. Phone service, office equipment, and transportation are provided in many cases when the inspector is in the locality of a headquarters station or outpost.

In order to visit the many cities and towns, particularly in the southeastern part of the State, which is accessible only by plane, testing equipment must be readily available. It would be impractical and expensive to transport test weights and measuring equipment on each trip. To solve this problem, we have purchased a number of test weight kits, 50-pound weights, and 5-gallon test measures and have placed them in most of the cities scattered throughout the State for the inspector's use when visiting these localities. Westward or Interior Alaska, as we call it, differs from the southeastern part of the State in that there are some 5,000 miles of highways. I wish to point out that our cities are unlike some of the larger cities in your States where you have populations of 200,000 to over a million in a concentrated area. Anchorage, our largest city, has an estimated population of 60,000, and other cities and towns range from 20,000 to less than 1,000 persons. Such populations, of course, reduce the number of markets, gas stations, and other establishments that the inspector must visit in each city. In some cases it is necessary only to spend a day or two in one of the smaller towns and to then travel to the next city or village.

In 1957 we placed in service a weights and measures truck, complete with test weights, standard measures, and a 100-gallon meter prover equipped with a power-take-off pump for checking vehicle tank and bulk-plant meters. This equipment is stored in Anchorage, some 800 miles from the Juneau headquarters of our weights and measures activity. The equipment is used to cover most of the locations within a radius of 500 to 800 miles of Anchorage, as well as all of the highway system.

If you were to travel with me on a field trip of inspections, we would leave our Juneau headquarters by plane and fly 4 hours to Anchorage, where we would work that city for a period of 3 to 4 weeks. We would then travel by truck the loop route to Fairbanks, 456 miles distant, checking all the gas stations, combination lodges, grocery stores and small towns on the way. In about 6 days we would arrive in Fairbanks, remaining there for a period of 2 to 3 weeks. We would then take a different highway, working to the Canada-Alaska border, then driving through 500 miles of the Yukon Territory and back to the southern border of the Yukon-British Columbia and Alaska borders. We would work the Alaska Highway again to the small town of Haines, where we would ferry our truck and equipment to Juneau, a trip of 6 hours by water, and enjoy the scenery of the most beautiful mountains and glaciers in the world. By this time we would have spent about 50 days in the field and inspected some 400 pieces of equipment.

After a couple of weeks working around Juneau with our truck, we would take the ferry again and drive through the Yukon Territory to the Alaskan border, then take another route to several of the sea-coast towns, mountain villages, and highways, eventually returning to our starting point of Anchorage. From here we would fly to Nome and several other cities that are inaccessible by road. There we

would find conditions very different from those in the larger cities that we had just left. Living conditions and prices are much higher, for every item of food, clothing, and fuel must be transported by boat or plane. The people in these remote areas are mostly native Indian or Eskimo. The meat markets instead of selling all beef, have their cases filled with reindeer meat from the local herds of reindeer, which are under strict control of the Federal Government.

The native Eskimo is a herder (better known to you as a cowboy) except that the Eskimo walks with his herd instead of using a horse as most cowboys do. Also, the methods of buying and selling are different from the larger cities. For many years the buying and selling of fish has been exchanged on a size basis instead of the customary weight basis that is practiced in the southern part of the State. This makes it difficult, in some respects, to promulgate weights and measures regulations to be uniform for the entire State. Bread is another item that would be difficult to control to a uniform weight and size, as you have in your States. In a number of the remote towns, the local baker may have three or four dozen bread pans that may vary in size and shape—resulting in the product being offered for sale in sizes ranging from one pound to one pound 4 or 5 ounces, all selling for the same price. If we put out a regulation that bread for the entire State must be sold in a one-pound or 1½-pound loaf with the generally accepted tolerances, we would probably force these small bakers out of business and have the local population run us out of town. I do not wish to give the impression that we in Alaska do not have uniformity in our regulations; however, there are exceptions like those I have just stated that must be considered when drafting regulations to be enforced over the entire State.

Other regulations that we do enforce are those covering the sale and repair of weighing and measuring devices. The salesman or repairman must report to the Department within 10 days the location and type of equipment sold or of the major repair work performed on scales, gas pumps, or other equipment. Before any repairman may break a seal that has been placed on a piece of equipment by the inspector, he must first obtain a permit issued by our office. These permits are issued on a yearly basis to repairmen who are properly qualified both as to experience and as to general knowledge of weights and measures regulations.

Regulations concerning mechanics of equipment were promulgated in order to control to some extent the practice of salesmen who come to Alaska with an order book to sell scales and ship them to the customer without any followup to see that the equipment is properly installed for use. One section of our regulations reads, in part: "Any person who . . . sells . . . offers for sale . . . or exposes for sale . . . a false weight or measure . . . is guilty of a misdemeanor and upon conviction shall be punished by a fine not exceeding \$500 or imprisonment not exceeding one year, or both." We have notified all known dealers and salesmen doing business in Alaska concerning these regulations. They have accepted these regulations and are willing to cooperate in the enforcement of our weights and measures regulations.

Prior to 1956, Alaska had very little weights and measures enforcement and packers shipped into the State packages having no declaration of the net quantity of the commodity. The merchants

were openly selling products on a gross weight basis although the law concerning net weight sales had been in effect since 1939. This irregularity stresses the importance of education, enforcement, and publicity. Unless the merchants and packers were informed of the regulations and the weights and measures official continually made routine inspections, this habit could have developed into serious complications which would have been difficult to correct. A drive was immediately started to notify all violators of the requirements. Within a very short time this practice was corrected.

Concerning our future plans on weights and measures administration as a State, we, like a great many of our sister States and jurisdictions, desire to enact the Model State Law, promulgate the rules and regulations as recommended by the National Conference on Weights and Measures, and follow the specifications and tolerances contained in Handbook 44, with a view to some day having complete uniformity within all the 50 States of our Nation.

We, in Alaska, feel that we will obtain this goal in the not-too-distant future by keeping before the public our educational program, showing the film, "Assignment—Weights and Measures" to as many clubs and service groups as possible, thus keeping in contact with those officials responsible for appropriations and equipment. Besides the publicity received during our recent Weights and Measures Week, we also received the State Standards of Weight and Measure. These were presented to the State of Alaska by the Secretary of Commerce at the National Bureau of Standards in Washington, D.C. These Standards, comprising a yard and meter bar, gold plated weights from 50 pounds down to $\frac{1}{32}$ ounce, volumetric measures from 5 gallons to 2-ounce graduates, and mahogany-finished glass cases to display the equipment, were gratefully received, and they stressed the importance of weights and measures administration to our State officials.

On March 17 of this year, our legislature saw fit to transfer the Weights and Measures Division from the Department of State Police to the Department of Commerce. The Governor has 6 months to make transfers under the State Reorganization Bill. How this transfer will affect our Division is difficult to determine at this time. However, I feel confident that our operations in the Department of Commerce will work out very well and, in some respects, much better than in the Department of State Police. Later this year we intend to draft an entirely new weights and measures code, modeled on the recommendations of this National Conference. We trust that we may call on the National Bureau of Standards to help develop a future program of weights and measures administration for our State.

DISCUSSION OF FOREGOING PAPER

MR. SANDERS: I was particularly interested in your reference to a registration plan for scale servicemen. You called it a permit arrangement. Could you tell us what brought about the installation of such a plan in Alaska and expand, perhaps, on how it works?

MR. FINDLAY: I have been a salesman myself and realize fully that sometimes a piece of equipment is sold and no adequate provisions for its service are provided. In weights and measures, this can be disastrous, because not only does the equipment require approval by competent State authority, but also it may very well control the profit

or loss of its owner. Our plan is simply that, on application, permit cards are issued to those who by their experience seem qualified to undertake repair of devices. It is necessary that we authorize registered servicemen to remove rejection tags and return to service devices that have been repaired, because it obviously would be impossible for an inspector to return to some remote location on call of the proprietor of a place of business that his rejected device had been repaired.

MR. SANDERS: The Scale Manufacturers Association, which I represent, highly endorses such a plan of registration for scale servicemen.

DR. GORDON: I noted your reference to the need for lack of uniformity in sizes of loaves of bread. How much time do you expect to transpire before it will be possible to bring about uniformity in this commodity?

MR. FINDLAY: Because of the circumstances that I explained in my paper, I cannot predict uniformity in sizes of loaves of bread in the foreseeable future.

FULL MEASURE

By HON. B. J. BUTLER, *Commissioner, Department of Agriculture,
State of Kentucky*

The importance of weights and measures work in any State, province, or city, cannot be overemphasized. In Kentucky, as in many other States, this work is placed in the Department of Agriculture. During my 4-year term as commissioner, which now nears its termination, I have exerted every effort to support your work.

First, I had to learn something of the activities, procedures, and problems which are yours. Having done this, I attempted in my meager way to lend a hand. During my first year in office it was my privilege to attend the National Conference on Weights and Measures. To say the least, this was an enlightening and challenging experience. Enlightening, because of the vast new horizons it opened to me and the insight it provided in your endeavors; challenging, because of the opportunities I saw for greater participation of the so-called higher echelon.

If my memory serves me correctly, I was the only commissioner or director of agriculture at that meeting. For a moment I wondered if I was a carpetbagger in the Holy Land! Then the great warmth of your friendship penetrated me and I felt as if I were somewhat a real part of your group. But to merely belong is of no real value and to do so is of no challenge to a restless person. The problem now was what could those in similar capacities to mine do to further your efforts. After all, this was a part of our work, too!

Like so many other good intentions, mine were soon absorbed by other things—I became so engrossed with the urgent that I neglected the important. Another year passed and another Weights and Measures Conference rolled around. An invitation was placed neatly on my desk and underscored in red so I would not miss it. But I found some reason to avoid this one. But in a few weeks the proceedings of that session were placed in a conspicuous place on my desk. There was also a polite note that suggested that there was important material in this document that would be helpful to me.

I moved it about from one side of the desk to the other for several days. Then one morning my secretary suggested, or in fact insisted, that I clean the desk up a bit. The weights and measures document

was the last thing left—I would just have to browse through it so I could at least let on that I knew what it was about. But as I got into the thing I got real interested and learned a whole lot. Then an idea struck me—why not try to get some others of my same category interested. At the National Meeting of Commissioners that fall, there was much discussion of the matter and I found Parke Brinkley, of Virginia, was most active and interested and had already planned some in this direction.

We have had, from that day to this, a Committee on Weights and Measures. This group has been showing increasing interest and activity in each succeeding year. It has been my privilege to be a member since its formation and this year I am honored to be its chairman.

At this juncture I invite each and every one of you to give us the benefit of your thinking, ideas, and suggestions as to what this committee might do to further the weights and measures program. Go home and talk it over with those in your State who will come to our annual meeting of State Departments of Agriculture this fall. If this is not possible or interest is not there, correspond directly with me. Other members of the committee are Roy Freeland, Kansas; William L. Harrelson, South Carolina; Robert H. Terhune, Ohio; P. I. Fitts, New Hampshire; and S. E. Corley, Mississippi.

Last year it was my privilege and honor to have the opportunity to address this group. Then last October it was my good fortune to speak to the California Association of Weights and Measures annual meeting in Monterey. To you Californians I can say you almost gained a citizen! And now I am back with you for a third session. Pretty soon you will think I am an important weights and measures man and not just some beat up politician and commissioner of agriculture.

This reminds me of a story told in our State. Up near Jackson, which is the county seat of "Bloody" Breathitt County, there is a road that winds up the mountain. It has a series of hairpin turns on it which are separated by perhaps a half-mile linear distance but very close together vertically.

A hitchhiker in this vicinity threw up his thumb at a passing truck, but the driver paid no heed. As the truck roared on down hill and made his turn, the hitchhiker merely stepped down over the bank and onto the road at the next bend. Again, the thumb went up, but again the truck showed no sign of stopping. Once more our hero climbs down to a lower level of the road and hoists his thumb again as the truck approached. This time the driver applied the brakes and came to a halt. "Hop in buddy," he said, "You know I ain't supposed to pick up hitchhikers, but your face looked so familiar, I'm just sure I know you from some place!"

Let us review briefly the action of the Weights and Measures Committee. At the last annual meeting of the National Association of Departments of Agriculture there were some three resolutions passed. In addition to the resolution previously reported by the Special Committee on Trading in Grains by Weight, the following two were adopted:

WEIGHTS AND MEASURES

Whereas, most Weights and Measures laws are enforced by Departments of Agriculture; and

Whereas, uniformity is the essence of good weights and measures laws; and

Whereas, uniformity of specifications and tolerances is an important factor in the manufacturing of commercial equipment; and

Whereas, the National Conference on Weights and Measures, in cooperation with the National Bureau of Standards, has published a code on Weights and Measures Regulations covering specifications and tolerances; and

Whereas, in order for States to render this all-important service to their citizens, it is necessary to have standardization and coordination of laws and regulations with other States and the United States Government;

Now therefore be it Resolved, that the National Association of State Departments of Agriculture, in convention assembled at Madison, Wis., September 29 through October 3, 1958, encourage and promote the adoption of Handbook 44, as adopted by the National Conference on Weights and Measures and recommended by the National Bureau of Standards, in order to bring about uniform laws, and regulatory requirements in all States; and

Be it further Resolved, that the association urge its members to examine the individual Weights and Measures program for the purpose of modernizing and standardizing their testing equipment and enforcement practices, taking full advantage of the assistance that may be obtained from the National Bureau of Standards.

MOISTURE DETERMINATIONS FOR GRAINS

Whereas, the accurate determination of the moisture contents of grains and other agricultural products is of great economical importance because moisture is a factor in determining the prices at which such products are marketed; and

Whereas, an inaccurate grain moisture meter may cost a farmer as much as 30 to 35 cents per bushel in the price received for his grain; and

Whereas, a plurality of instruments and methods are currently used in determining the moisture content of grains;

Therefore be it Resolved, that the National Association of State Departments of Agriculture assembled at Annual Convention in Madison, Wis., September 29—October 3, 1958, request the United States Department of Agriculture and the National Bureau of Standards, working jointly, to investigate the subject of moisture determinations of grains to the end that accurate means and methods for this purpose be developed, and that uniform specifications, tolerances and testing methods be established for the instruments involved in such determinations, and recommend them to the States for adoption.

Some of us were not fully satisfied with all elements of these, but at least they are a start in the right direction. And even more important, this represents another group that has begun to think about the work which you do and the problems that are yours. And the more you get to doing this, the greater will be your progress.

The challenge to improve and expand our efforts faces us all each day. Did you ever stop to wonder why you got into weights and measures work and then ponder on why you didn't get out after you found yourself in? There are no doubt many easier ways to make a more prosperous living and all of you could qualify in some of these endeavors. Yet you remain for you have come upon one of life's challenges—you have found a thing to do which gives you satisfaction in doing it.

Speaking of easier things to do reminds me of one of my experiences when I was county agent in Fayette County. One dismal February afternoon, I was passing the large Veterans Hospital just outside Lexington when the notion struck me to stop by and call on an old friend who was there taking treatment for a nervous breakdown. You see, all the patients in that hospital are there from mental disturbances with the exception of a few emergency cases.

As I walked down a long corridor I came upon one of the patients in his dark red robe. He gazed intently out the window and his eyes seemed to see beyond the landscape and steadily falling cold February rain. As I went by I almost automatically said, "Hi, pardner, how

are you?" Quickly he turned about and his eyes lit up like he had discovered a long lost friend. Being in no hurry, I decided to pass the time of day with him. Our conversation brought out the fact that I was a county agent and that he at one time had farmed on a small farm in the eastern and mountainous part of our State.

He spoke with a high degree of intelligence, so by now I was sure he was one of the emergency cases. Boldly I came forth with this question, "What are you in here for?" And quickly, with a cunning grin, came his reply, "They think I'm crazy, but ain't this a darn sight easier than farming in Eastern Kentucky!" For a moment I pondered his remark then said, "Buddy, have you got another bed in your ward?"

It is my impression that your work is being more readily accepted and appreciated each succeeding year. In Kentucky we have reached a point where we can almost always get a court to decide in our favor—a few years ago we were generally afraid to take a case to court, for we almost knew the outcome before going. When you get juries to seeing it the right way you can be assured the public is sold on the correctness and importance of the law involved.

The road to this point has not been easy. There has had to be much sweat, effort, patience, and even force. Sometimes when we have a tough case to deal with, our patience is tried beyond the breaking point and we must resort to stern measures. This is, of course, the difficult portion of any assignment, but an important one. Indecision is the prelude to disaster and so we must decide our course and stay on it.

To deal sternly with people reminds me of the story of the little boy in the toy department of a large store. He had mounted himself upon a rocking horse and would not get off. His mother tried, then father, but to no avail. The saleslady now talked patiently to the young man, but he only shook his head and clung on tighter. The floor manager now tried his hand, but he, too, failed. Then along came the janitor and he saw the problem. He stepped up beside the lad and said something to him and the boy quickly dismounted, took his mother's hand and departed.

The amazed saleslady and manager were astounded. "What did you say to him to get him off so easily?" queried the manager. Quickly the janitor replied, "I said, get off that horse or I'll break your damn neck!"

I fear the watchdog service which you provide is taken for granted by too many of our citizens. Perhaps you need a good slogan to focus attention to your efforts. Your ideas on this would far outweigh mine.

I wonder how quickly those who use corner cutting tactics would move in if you moved out. This not only is unfair to the consumer, but also to the legitimate operator. The strategic placement of the weapon which you hold is of more than significant consequence.

I recall a war story that illustrates this to a degree. While in one of our static positions in the Apennine Mountains we were continually harassed by an enemy machine gun. Finally, we located its position but we could not hit it with mortar or artillery fire because of its protected location. We planned to send a patrol that night to eliminate this obnoxious fellow.

Shortly after dark the sergeant in charge moved out with his carefully selected patrol. All was quiet until about midnight. The

silence was broken by the distinctive sound of a burst of German machine gun fire. Following this, a few American carbine shots rang out. Then one more burst from the "Jerry" and all was again silent. Some 2 hours later the sergeant reported to me in a most military manner. "Did you get that machine gun, Sergeant?" I asked. To which he replied in his Georgia accent, "No suh, they was still using it!"

I'm sure that as long as we are still using your services our position will be much more stable and less easily invaded.

Now, in true tradition of most speakers, I have talked much and said little. If you people could find some way of getting full measure from speeches, or better still, getting the speeches cut to where the audience gets full measure for their time, I'm certain your popularity and complete acceptance by the public would be assured.

It has been my great pleasure to meet with you for my third time. As I depart this session I full well realize that it will perhaps be my last with you. My term as Commissioner expires at the end of the calendar year. In Kentucky we are not permitted to succeed ourselves. Maybe somewhere down life's road we shall meet again—I certainly hope so and trust you feel the same.

For your many courtesies I am grateful; for your kindness, I am deeply appreciative. I only hope that our association has meant as much to you as it has to me. Continue the good work and seek always to improve yourself and your profession.

WEIGHTS AND MEASURES ADMINISTRATION IN FRANCE

By LOUIS KRACH, *Chief Engineer, Service of Instruments of Measure, Ministry of Industry and Commerce, Republic of France*

I am highly honored and it is a very great pleasure for me to be here. I wish to thank very much Mr. Bussey, the Secretary, and all the staff of the 44th National Conference on Weights and Measures for their very kind invitation. I am going to try to give you a general view of the French weights and measures service.

A preliminary remark is necessary. France is a completely centralized State. We do not have local laws. All the laws, regulations, and even instructions are enacted in Paris and are applicable everywhere. The departments or districts into which France is divided are only administrative divisions.

The role of the inspectors of weights and measures is defined by the law of July 4, 1837, article 7:

The inspectors of weights and measures shall determine and report infractions of the laws and regulations relative to the metric system of weights and measures. They may impound such weighing and measuring instruments when their use is prohibited by the laws and regulations. Their reports shall be accepted by the courts in the absence of proof of the contrary. The inspectors shall be sworn by the competent court of their area.

The law of April 2, 1919, further extends the duties of the inspectors by entrusting them with the verification and inspection of all other instruments for measuring units legal in France, including those of length, surface, volume, and angle; mass and density (never translated by "densite" but by "masse volumique"); time, force, energy, power, pressure, electric resistance, intensity, potential and quantity,

temperature and quantity of heat and cold; luminous intensity and flux, degree of illumination, magnifying power of optical lenses, etc.

For more than 120 years, the metric system has been the only one lawful.

The problems of organization and control are regulated by the decree of November 30, 1944.

General Organization

The control of measuring instruments embraces the following fields:

1. The examination and testing of prototypes (models) for approval of design and construction.
2. The initial verification of new and repaired instruments for conformity with the approved model and compliance with official specifications.
3. The periodic verification of instruments in current use for determining whether such instruments underwent initial verification and for ordering adjustment or withdrawal from service of those no longer conforming to official regulations.
4. The supervision of instruments in current use for compliance with legislative provisions, proper operating conditions, and correct and honest utilization by their owners and users.

Who is entrusted with this task, the intent of which is well known by you? They are the Office of Weights and Measures.

The country is divided into 10 regional districts, grouping 35 division offices and 160 subordinate offices. Each office is equipped with standards calibrated in terms of the international standards.

Approval of Models

One of the primary tasks of the Office of Weights and Measures is the examination of instrument models designed by the various manufacturers. This is an important mission because, if instruments manufactured to conform with the submitted and approved model fail to function properly, only the initial verification of new instruments conforming with the model can result in a decision for revocation of approval.

Verification of Instruments

Obviously, two kinds of verification are required—the so-called initial verification which certifies that the new instruments conform to the approved model, and the periodic verification which determines whether the instruments function properly and accurately. Both verifications are certified by the application of stamps. Periodic verification takes place once a year in principle.

The sworn agents are given extensive powers to carry out periodic verifications and cannot be refused, for instance, entry into rooms in which the instruments to be examined are kept. Any infraction of the regulations is made into a report which is transmitted to the judicial authorities and may result in a fine or in imprisonment.

The sworn agents have also to carry out surprise inspections to detect and prosecute the users of deliberately altered or nonstandard devices or instruments, and those defrauding on the quantity of merchandise sold. Article 27 of the decree of November 30, 1944, further states:

If posters, advertisements, catalogs, journals, labels, or packaging indicate units of measure other than the denominations for the respective values listed in the table attached to the decree, police officers and the agents of weights and measures are required to report such infractions . . .

The intent of this article is to provide for compliance with the decimal metric system.

Activities of Offices

In a rather vast and modern country like France, numerous measuring instruments of all kinds are constantly used. However, the personnel of the service is quite restricted and consists of only about 350 people, secretary girls included.

In 1957, the service performed initial verification of:

4,275,000 linear measures

250,000 liquid measures

1,500,000 weights

250,000 scales (ranging from fractions of a carat to over 100 metric tons and more)

40,000 petrol pumps

400,000 gas meters

1,300,000 electric meters

In addition, the service calibrated during the same year:

6,600 containers of various types with a total volume of 1,400,000 cubic meters, which included:

4,200 vehicle tanks

1,650 storage tanks

200 barge tanks and tankers for river and high seas shipping

We have to test 5,500 railway car scales and 30,000 truck scales. For this purpose, we have designed test trucks especially adapted which differ from yours on this point: The calibrated weights are cylindrical and can roll, and an electrical crane permits them to move out of and into the truck.

We have a total of 305 technical personnel, as follows: two general engineers, assuring the general management, and six chief engineers who are the managers of the six technical divisions, all of whom reside in Paris; five chief engineers and five engineers who reside in 10 important towns and each of whom manages about one-tenth of all the metropolitan territory; 25 engineers divided between Paris and several other towns according to the needs; 32 divisionary inspectors, 200 ordinary inspectors; and 30 technical assistants.

The tolerances, the specifications, and even the procedures are generally not very different from yours. For example, in the case of liquid meters, for a delivery of 5 gallons of gasoline, your tolerance is 7 cubic inches, or $7/1155 = 0.45$ percent. In France, the tolerance in this case is 0.5 percent. However, regarding some points, the differences are substantially the following: The most general one is that, in France, all weighing and measuring devices must, without exception, be tested and sealed in the plant of the manufacturer. Nothing submitted to the State control can be sold and delivered to the purchaser before it has been tested and sealed. The manufacturers must put to our disposal all the necessary testing apparatus.

A second difference is that sometimes we request supplementary mechanisms in order to make the fraud more difficult or even completely impossible.

A third difference concerns liquid-measuring devices. The air-eliminator must be so efficient that in any case it lets pass not more than half percent of gas (air or vapor) with the liquid. All the air-elimini-

nators are tested and sealed. On the contrary, we have never required visagages.

I think you know that, on the proposal of France, an international organization (a convention between states) has been created in order to standardize progressively the laws and regulations in the different states of the world. This project is ambitious indeed, but I believe it must be supported with tenacity for as long a time as necessary.

I desire to draw your attention to one question, and this is my personal point of view. Have you in mind how much the metric system shall be used in the future after Continental Europe, Russia, South America, and all the new or newly reorganized states, India, Japan, Indonesia, China, and the greatest part of Africa have adopted the metric system? You also use it for electrical units. Think what the situation will be in two or three decades. Check the number of men using the metric system or not.

I am convinced it is to your interest to consider this unavoidable problem. To find a solution is your concern, and it is a most difficult one. In spite of all the difficulties, I am sure all weights and measures men of all countries of the world can understand one another. I know many of them in Europe and now know many in the United States. We all have the same spirit, the same aim, the same difficulties. All the occasions for a better understanding are useful. For this reason my government decided to send me here. We, weights and measures men, scale men, can in our particular field, which is so important in the daily life of all persons in all countries, help the efforts of the numerous men who work for peace and a better world by all possible means.

REPORT OF COMMITTEE ON SPECIFICATIONS AND TOLERANCES

Presented by J. E. BRENTON, *Chairman, Chief, Bureau of Weights and Measures, Department of Agriculture, State of California*

Because of the relatively few items before the committee on Specifications and Tolerances, it was deemed unnecessary to hold an interim meeting. Consultation among committee members and between the committee and weights and measures officials, industry representatives, and others, has been carried on by correspondence.

Presented below are the recommendations of the committee, together with appropriate comments, grouped under the code headings as found in Handbook 44—2d edition, as amended through the 43d National Conference.

GENERAL CODE

The importance of selecting commercial weighing and measuring equipment that is suitable for the service in which it is to be used cannot be overemphasized. This fact has been recognized for many years; but with the ever increasing complexities in commerce and trade, its importance is constantly increasing. The specific paragraph in Handbook 44 relating to this important matter is general-regulation paragraph G-R.3. **SUITABILITY OF EQUIPMENT**, which will be found on page 39 and which now reads:

G-R.3 SUITABILITY OF EQUIPMENT.—Commercial equipment shall be suitable as to design and capacity for the service in which it is used.

It has been suggested that this paragraph be expanded so as to make its meaning more readily understandable and to increase its usefulness

to the enforcement official. Accordingly, the committee offers for consideration the following:

Amend general-regulation paragraph G-R.3. SUITABILITY OF EQUIPMENT to read:

G-R.3. SUITABILITY OF EQUIPMENT.—Commercial equipment shall be suitable for the service in which it is used with respect to all elements of its design, including but not limited to its weighing capacity (for weighing devices), its rate of flow (for liquid-measuring devices), the character, number, size, and location of its indicating or recording elements, and the value of its minimum graduated interval.

(The item on SUITABILITY OF EQUIPMENT was adopted by voice vote.)

SCALE CODE

1. The committee has given continuous attention since 1955 to the matter of producing a regulation, or regulations, that would properly and adequately control the maximum value of minimum graduated intervals on large-capacity scales of all classes other than those now controlled by specific regulations. The Scale Manufacturers Association has also been studying this matter extensively and has rendered valuable assistance to the committee. Many meetings, conferences, and discussions on this subject have been held.

It is recognized by all of those who have been working on this problem that many complexities are involved. It is exceedingly difficult to include all desirable details in a single regulation applying to a very wide variety of types, capacities, and classes of large-capacity scales. In the preparation of regulations having such broad application, unnecessary restrictions that might handicap manufacturing processes, and unwarranted discrimination between classes of devices must be avoided. The committee feels that the Conference will be well advised to maintain a somewhat liberal position in its adoption of requirements having such wide application.

After much study, many discussions, and lengthy hearings, the following regulations were submitted to and adopted by the 42d National Conference in 1957.

R.4.6. ON CRANE SCALES.

R.4.6.1. WEIGHBEAM TYPE.—The value of the minimum graduated interval on the weighbeam elements of a weighbeam-type crane scale shall be not greater than 0.05 percent of the nominal capacity of the scale.

R.4.6.2. AUTOMATIC-INDICATING TYPE.—The value of the minimum graduated interval on the reading-face elements of an automatic-indicating type crane scale shall be not greater than 0.2 percent of the reading-face capacity.

R.4.7. ON LARGE-CAPACITY SCALES OTHER THAN LIVESTOCK, ANIMAL, VEHICLE, WHEEL-LOAD, AXLE-LOAD, HAND-OPERATED GRAIN HOPPER, AND CRANE SCALES.

R.4.7.1. WEIGHBEAM TYPE.—The value of the minimum graduated interval on the main weighbeam elements and on the tare weighbeam elements of large-capacity scales other than livestock, animal, vehicle, wheel-load, axle-load, hand-operated grain hopper, and crane scales shall be not greater than 0.05 percent of the nominal capacity of the scale, or one-fourth pound, whichever is greater, and in any case not greater than 50 pounds.

R.4.7.2. AUTOMATIC-INDICATING TYPE.—The value of the minimum graduated interval on the reading-face elements of large-capacity automatic-indicating scales other than livestock, animal, vehicle, wheel-load, axle-load, hand-operated grain hopper, and crane scales shall be not greater than 0.1 percent of the nominal capacity of the scale, or one-fourth pound, whichever is greater, and in any case not greater than 50 pounds.

It was recognized during the presentation and discussions of these regulations in 1957 that they were not perfect and that further revision would be required. (See NBS Miscellaneous Publication 222, Report

of the 42d National Conference on Weights and Measures, 1957, page 77.) Study by the committee and by the Scale Manufacturers Association has continued since that time, and a further report was made to the 43d National Conference in 1958. (See NBS Miscellaneous Publication 225, Report of the 43d National Conference on Weights and Measures, 1958, pages 63 and 64.)

These code requirements as they now stand are those adopted in 1957. The committee feels that the discrimination between "weigh-beam-type" and "automatic-indicating type" scales as now set up in regulation paragraphs R.4.6.1. and R.4.6.2., and R.4.7.1. and R.4.7.2., is undesirable and unnecessary. The committee feels there is no justification for requiring smaller graduations on a "weighbeam-type" scale than on an "automatic-indicating type" scale of the same size and capacity, and used for identical purposes. It is, therefore, the opinion of the committee that the R.4.6. and R.4.7. paragraphs of the Scale Code should be amended. Based on this conclusion, on February 12, 1959, the committee secretary mailed to approximately 88 weights and measures officials and the Scale Manufacturers Association advance copies of proposed amendments to the previously mentioned sections of the Scale Code. The proposed amendments are as follows:

To correct obvious inconsistencies in the present requirements concerning maximum value of minimum graduated interval on certain large-capacity scales, delete regulation paragraphs R.4.6., R.4.6.1., R.4.6.2., R.4.7., R.4.7.1., and R.4.7.2., and replace these with the following nonretroactive regulation paragraphs:

R.4.6. ON CRANE SCALES.—The value of the minimum graduated interval on the main weighbeam elements, on the tare weighbeam elements, and on the reading-face elements of a crane scale shall not be greater than 0.1 percent of the nominal capacity of the scale. (See also G-R.3.)

R.4.7. ON LARGE-CAPACITY SCALES OTHER THAN LIVESTOCK, ANIMAL, VEHICLE, WHEEL-LOAD, AXLE-LOAD, HAND-OPERATED GRAIN HOPPER, CRANE, AND RAILWAY TRACK SCALES.—The value of the minimum graduated interval on the main weighbeam elements, on the tare weighbeam elements, and on the reading-face elements of large-capacity scales other than livestock, animal, vehicle, wheel-load, axle-load, hand-operated grain hopper, crane, and railway track scales shall not be greater than the values shown in table 9. (See also G-R.3.)

TABLE 9.—MAXIMUM VALUE OF MINIMUM GRADUATED INTERVAL ON THE MAIN WEIGHBEAM ELEMENTS, ON THE TARE WEIGHBEAM ELEMENTS, AND ON THE READING-FACE ELEMENTS OF LARGE-CAPACITY SCALES OTHER THAN LIVESTOCK, ANIMAL, VEHICLE, WHEEL-LOAD, AXLE-LOAD, HAND-OPERATED GRAIN HOPPER, CRANE, AND RAILWAY TRACK SCALES

Nominal capacity of scale	Maximum value of minimum graduated interval on main and tare weighbeam and reading-face elements
<i>Pounds</i>	<i>Pounds</i>
500 or less	1/2
501 to 5,500, incl.	1
5,501 to 25,000, incl.	5
25,001 to 45,000, incl.	10
45,001 to 110,000, incl.	20
Over 110,000	50

Replies were received from approximately 25 weights and measures officials. Of this number, only two officials expressed any disapproval of the proposal as submitted. A reply was received from the Scale Manufacturers Association on March 24, 1959, expressing rather complete disagreement with all proposals made.

Now, after more than 3 years of study, and with extensive and helpful counsel, advice, and assistance from the Scale Manufacturers Association and its member companies, and based upon its keen desire to avoid unnecessarily restrictive requirements that might result in undesirable handicaps to manufacturers, and to avoid ambiguities and possible discrimination, your committee has reached the tentative conclusion that the following amendment to the Scale Code is necessary, practical, and desirable. It is offered for the careful consideration and detail comments of all who have interest.

Amend the Scale Code by deleting paragraphs R.4.6., R.4.6.1., R.4.6.2., R.4.7., R.4.7.1., and R.4.7.2., and by inserting in lieu thereof the following paragraph to be numbered R.4.6. to read:

R.4.6. ON LARGE-CAPACITY SCALES OTHER THAN LIVESTOCK, ANIMAL, VEHICLE, WHEEL-LOAD, AXLE-LOAD, HAND-OPERATED GRAIN HOPPER, AND RAILWAY TRACK SCALES.—The value of the minimum graduated interval on the main weighbeam elements, on the tare weighbeam elements, and on the reading-face elements of large-capacity scales other than livestock, animal, vehicle, wheel-load, axle-load, hand-operated grain hopper, and railway track scales, shall be not greater than 0.1 percent of the nominal capacity of the scale, or one-fourth pound, whichever is greater, and in any case not greater than 50 pounds.

The committee believes that the adoption of this recommended amendment, together with the adoption of the recommended amendment to general regulation paragraph G–R.3. of the General Code, should serve adequately in this area to the satisfaction of manufacturers, users, and weights and measures officials alike.

DISCUSSION ON THE FOREGOING ITEM

MR. SANDERS: The Scale Manufacturers Association, representing some 85 percent of the total scale manufacturing industry and probably even a larger percentage of the manufacturers of large-capacity scales, has been studying the matter of maximum value of minimum graduated intervals on large-capacity scales for at least 5 years. We are opposed to the amendment recommended by the committee and we recommend that it be not adopted and that this item be returned to the committee for further consideration.

The committee proposal is approximately what was recommended in 1955 and we believe to adopt it at this time would be a backward step rather a progressive step. The proposed language would create serious hardship with respect to crane scales. On automatic crane scales the committee recommendation is a reduction in the maximum value of the graduated interval from the present $2/10$ percent to $1/10$ percent. A crane scale is in a special service and must be of special design. As I interpret the committee recommendation, it would require that crane scales used in commerce be limited in capacity to 1,000 pounds.

With respect to beam scales, this recommendation increases the allowable graduation from $1/20$ percent to $1/10$ percent. In our opinion, that is a decrease in accuracy. In effect all large scales could be put in the same category insofar as maximum values of minimum

graduated intervals are concerned. No beam scale manufacturer has objected to the 1/20 percent requirement; they all recommend it.

Under date of March 13, 1958, my association made a recommendation to the Specifications and Tolerances Committee which would require smaller graduations than are presently being proposed by the committee. Our recommendation is the most realistic suggestion that could be developed by the scale industry. This was rejected by the committee last year. This past March a draft proposal was made and was included in the tentative report of the committee which in our opinion was too restrictive and was not practical or realistic. We objected to that proposal and we feel that the present recommendation of the committee also should be rejected.

MR. R. V. MILLER: If I correctly interpret the recommendation of the committee, it would be possible for me to sell for commercial use a scale with a 1,000-pound dial and with nine drop weights, making a nominal capacity of 10,000 pounds with 10-pound graduations on the dial. If this recommendation is adopted, it will be possible for a scale manufacturer to produce and sell for commercial use any large-capacity scales other than livestock, animal, vehicle, wheel-load, hand-operated grain hopper, and railway scales with 50-pound graduations.

MR. BRENTON: Although the committee and the Conference did not accept the recommendation of the scale industry that 50-pound graduations be allowed on axle-load scales, the door is not closed. The committee has held this item on its agenda and will continue to study it. I should like the Conference not to lose sight of the adopted language of paragraph G-R.3. of the General Code, which was specifically designed to serve as a caution to purchasers of scales, manufacturers, and to weights and measures officials with respect to appropriate equipment in commercial service. The requirement recommended by the committee relating to these large-capacity scales is not the only precaution afforded under Handbook 44.

MR. HANSEN: Because it appears to me that the recommendation of the committee would allow lesser accuracy requirements in large-capacity scales, I suggest that this matter be postponed for further study.

(Scale Code—Item 1, MAXIMUM VALUE OF MINIMUM GRADUATED INTERVAL, was voted down by voice vote.)

The committee notes that a suggestion was made during the open session that wheel-load and axle-load scales be separately treated and that a minimum graduation of 50 pounds be considered for these devices. No action in this regard is recommended at this time.

2. To clarify the regulation pertaining to the use of prepackaging scales (see item 3, page 90 of this report), amend regulation paragraph R.18. to read:

R.18. PREPACKAGING SCALE.—A scale marked with the words "For Prepackaging Use Only" or with a statement of similar meaning shall be used only for putting up packages and shall not be used for direct sales of commodities not in package form to retail customers.

(Scale Code—Item 2 was adopted by voice vote.)

LIQUID-MEASURING DEVICE CODE

In its final report to the 43d Conference, the committee included in the section relative to the Liquid-Measuring Device Code an item

relative to the elapsed-time test for liquid-measuring devices. (See NBS Miscellaneous Publication 225, Report of the 43d National Conference on Weights and Measures, 1958, pages 65 and 66.) During the year, with the assistance of cooperating weights and measures officials, the Gasoline Pump Manufacturers Association conducted an extensive survey, including elapsed-time tests, on more than 100 pumps of various makes and ages. These tests were conducted in widely separated areas of the country, using both 4-hour and overnight periods between the first and second tests. Based on the data obtained from this survey and from other sources available to them, the Gasoline Pump Manufacturers Association has made the following definite recommendation to the Committee on Specifications and Tolerances pertaining to retail liquid-measuring devices. The Gasoline Pump Manufacturers Association made no recommendation relative to wholesale liquid-measuring devices.

1) Maintenance tolerances on elapsed time tests of liquid measuring devices shall be 2 cubic inches for the first hour for a retail device and $\frac{1}{2}$ cubic inch per hour thereafter, but in no case shall the tolerance be in excess of 6 cubic inches.

2) The maximum period of nonuse for any elapsed time test shall be 24 hours.

3) No change is recommended in paragraph N.1.4., Temperature Correction, since the recommended allowance of 0.6 percent per 10° F. change of temperature appears adequate.

Your committee concurs in principle in the recommendations of the Gasoline Pump Manufacturers Association. It is recommended, therefore, that notes paragraph N.1.4. be amended to read:

N.1.4. ELAPSED-TIME TESTS.

N.1.4.1. DURATION.—The duration of an elapsed-time test on a liquid-measuring device shall in no case exceed 24 hours.

N.1.4.2. TEMPERATURE CORRECTION.—In an elapsed-time test, the observed error on the delivery made after the device has stood unused shall be “corrected”, if necessary, by allowing for the unavoidable volume change of the liquid in the device (approximately $1\frac{1}{2}$ gallons in a retail meter-type device, and varying volumes in a wholesale device, depending on the installation) resulting from changes in temperature occurring during the period of nonuse of the device. In the case of motor fuels this temperature-volume change may be computed at 0.6 percent per 10° F., and 1.1 percent per 10° C., change of temperature.

and that tolerance paragraph T.2. be amended to read:

T.2. ON ELAPSED-TIME TEST.—Maintenance tolerances on elapsed-time tests of liquid-measuring devices shall be as follows: For a retail device, 2 cubic inches on a test extending over a period of 1 hour or less, plus an additional $\frac{1}{2}$ cubic inch for each hour or fractional part thereof beyond the first hour, but in no case more than 6 cubic inches. For a wholesale device, 5 cubic inches per hour. Acceptance tolerances shall be one-half the maintenance tolerances. (The error to which these tolerances are applied is the leakage error (see D.13.).) (See also D.12., N.1.4.1., and N.1.4.2.)

The committee emphasizes that the tolerances allowed in paragraph T.2. are for “leakage error” only (see paragraphs D.12. and D.13., page 82, NBS Handbook 44). This error should be considered completely separate from the normal operating errors in a device, as are provided for in table 1 of the code. Also, the committee is convinced that 24 hours is a sufficient period for any elapsed-time test,

and since a maximum leakage error is being recommended, it is essential that the maximum elapsed time be also fixed.

(The items on ELAPSED-TIME TESTS were adopted by voice vote.)

LIQUID-MEASURING DEVICE AND VEHICLE-TANK CODES

In the same mailing that included the proposed revisions pertaining to maximum values for minimum graduated intervals on large-capacity scales, the following changes in tolerances for wholesale liquid-measuring devices and vehicle-tank meters were included.

Liquid-Measuring Device Code

To correct what appears to be an inequitable situation with respect to the conduct of special tests on wholesale liquid-measuring devices with provers of capacities of less than 100 gallons, and to establish tolerances on both "normal" tests and "special" tests on a straight line curve representing approximately 0.15 percent of the indicated delivery for "normal" tests and 0.25 percent of the indicated delivery on "special" tests, amend table 1 to read as follows:

TABLE 1.—MAINTENANCE TOLERANCES, ON UNDERREGISTRATION AND ON OVERREGISTRATION, FOR LIQUID-MEASURING DEVICES, EXCEPT ON ELAPSED-TIME TESTS

For retail devices		
Indication		Tolerance
[No change from present requirements]		
For wholesale devices		
Indication	Tolerance	
	On "normal" tests	On "special" tests
<i>Gallons</i>	<i>Cubic inches</i>	<i>Cubic inches</i>
125 or less-----	50-----	100
126 to 225-----	75-----	125
226 to 325-----	100-----	150
326 to 425-----	125-----	200
426 to 525-----	175-----	300
526 to 775-----	250-----	450
776 to 1050-----	350-----	575
Over 1050-----	0.15 percent of indicated delivery.	0.25 percent of indicated delivery.

Vehicle-Tank Code

For the same reasons as are given in the proposed change to the tolerance table in the Code for Liquid-Measuring Devices, amend table 2, tolerances for vehicle-tank meters, to read as follows:

TABLE 2.—MAINTENANCE TOLERANCES, ON UNDERREGISTRATION AND ON OVERREGISTRATION, FOR VEHICLE-TANK METERS

Indication	Tolerance	
	On “normal” tests	On “special” tests
<i>Gallons</i>	<i>Cubic inches</i>	<i>Cubic inches</i>
125 or less-----	50-----	100
126 to 225-----	75-----	125
226 to 325-----	100-----	150
326 to 425-----	125-----	200
426 to 525-----	175-----	300
526 to 775-----	250-----	450
776 to 1050-----	350-----	575
Over 1050-----	0.15 percent of indicated delivery.	0.25 percent of indicated delivery.

Of approximately 25 replies received from weights and measures officials, only 3 registered any opposition to these proposed changes. On the other hand, the Weights and Measures Subcommittee of the Operations and Engineering Committee of the American Petroleum Institute informed the Committee on Specifications and Tolerances that it is the unanimous opinion of that group that none of the proposed changes should be adopted and that the tolerances for wholesale liquid-measuring devices and vehicle-tank meters should remain as they now stand.

Although the committee feels that the proposed changes have much merit, in view of the fact that the suggested changes and refinements are not of appreciable magnitude and importance, the fact that the committee of the American Petroleum Institute opposed the proposed changes, and the fact that the replies from weights and measures officials displayed a noticeable lack of enthusiasm for or interest in these proposed changes, it is the conclusion of the committee that no changes in tolerance table 1 of the Liquid-Measuring Device Code and tolerance table 2 of the Vehicle-Tank Code should be recommended to the 44th National Conference on Weights and Measures.

Tolerances—Retail Liquid-Measuring Devices

In the reply from one weights and measures official the recommendation was made that the tolerances for retail liquid-measuring devices as shown in table 1 “be given consideration with a view to lowering the tolerance on gasoline pumps.” The committee has no recommendation to make on this point.

LINEAR MEASURES CODE

To specifically prohibit the use of cloth tapes for commercial purposes and to consolidate material, design, and finish requirements for linear measures, the committee recommends that specification paragraph S.2. be amended to read:

S.2. MATERIAL, DESIGN, AND FINISH.—*A flexible tape shall be made of metal.* If an end measure is made of material softer than brass, the ends of

the measure shall be protected by brass (or other metal at least equally hard) securely attached. A rigid measure shall be straight. A folding measure shall open to a definite stop, and when so opened shall be straight. Measures shall be smoothly finished.

Delete paragraph S.3. and renumber paragraph S.4. to S.3.

(This item was adopted by voice vote.)

FABRIC-MEASURING DEVICE CODE

To provide for the use of newly developed materials in testing tapes for fabric-measuring devices, the committee recommends that notes paragraph N.1. be amended to read:

N.1. TESTING MEDIUM.—A fabric-measuring device shall be tested with a suitable nonmetallic testing tape approximately 3 inches wide and with a graduated length of at least 12 yards, made from such material and having such surface finish as to provide dimensional stability and reduce slippage to the practicable minimum.

(This item was adopted by voice vote.)

LIQUID FERTILIZERS

The committee has continued its studies of liquid-measuring devices used commercially to determine quantities of liquid fertilizers. An extensive survey of such devices in use was made by members of the committee. The committee has also maintained continuing correspondence with industry on this subject. Based on the facts that only a limited number of fluid meters are currently employed in this service and that no meter manufacturer, within the knowledge of the committee, is currently producing and marketing a meter designed and manufactured for this particular use, it is felt that any effort to produce a specific code to cover such devices would be premature. It is recommended, therefore, that this matter be continued on the agenda of the committee for further study and that no action on this subject be taken by the 44th National Conference on Weights and Measures. It is further recommended that, during the interim before such a specific code is adopted by the Conference, when weights and measures officials are called on to inspect and test fluid meters used for the commercial measurement of liquid fertilizer, they apply, in general, the provisions, including tolerances, of the Code for Liquefied Petroleum Gas Liquid-Measuring Devices insofar as they are clearly applicable and are deemed satisfactory for use as a guide.

RECOMMENDATIONS OF SCALE MANUFACTURERS ASSOCIATION

The committee has received seven definite recommendations from the Scale Manufacturers Association. These recommendations and the comments of the committee follow:

1. *H44 Interpretations and Their Publication.*—It was recommended that official committee interpretations of H44 provisions should be published as an addendum to the handbook. This would provide easy and ready access to these interpretations at all times.

The committee agrees with this recommendation. A complete study and necessary revision of appropriate official committee interpretations will be made for this purpose. The committee proposes that the 44th National Conference recommend to the National Bu-

reau of Standards that consideration be given to publishing official interpretations of the Committee on Specifications and Tolerances as Appendix II, National Bureau of Standards Handbook 44—2d Edition.

The committee desires to make clear that interpretations of Handbook 44 material will be submitted to the National Conference and considered for publication only if the matters questioned are not clarified in the codes and if the interpretations are considered to be of permanent value.

2. Local Exceptions to H44.—It was recommended that, in the interest of uniformity of requirements throughout the Nation, there be a conference sponsored campaign for the elimination of local variations from the H44 codes.

The committee wishes to express full appreciation for the comments and presentation of the Scale Manufacturers Association on this subject. It has been the continuous policy of the committee and the National Conference on Weights and Measures, for a good many years, to encourage adoption by State and local jurisdictions of National Conference recommendations, particularly codes of specifications, tolerances, and regulations for commercial weighing and measuring devices. The committee also wishes to call the attention of Conference delegates to the fact that the National Association of State Departments of Agriculture adopted the following resolution during their 1958 convention:

Whereas, most weights and measures laws are enforced by Departments of Agriculture; and

Whereas, uniformity is the essence of good weights and measures laws; and

Whereas, uniformity of specifications and tolerances is an important factor in the manufacturing of commercial equipment; and

Whereas the National Conference on Weights and Measures, in cooperation with the National Bureau of Standards, has published a code on weights and measures regulations covering specifications and tolerances; and

Whereas, in order for States to render this all-important service to their citizens, it is necessary to have standardization and coordination of laws and regulations with other States and the United States Government;

Now therefore be it Resolved, that the National Association of State Departments of Agriculture, in convention assembled at Madison, Wis., September 29 through October 3, 1958, encourage and promote the adoption of Handbook 44, as adopted by the National Conference on Weights and Measures and recommended by the National Bureau of Standards, in order to bring about uniform laws, and regulatory requirements in all States; and

Be it further Resolved, that the Association urge its members to examine the individual weights and measures program for the purpose of modernizing and standardizing their testing equipment and enforcement practices, taking full advantage of the assistance that may be obtained from the National Bureau of Standards.

The committee will welcome suggestions as to how it or the National Conference can improve and make more effective the present activity in this area.

3. Permitted Use of Prepackaging Scales.—It was recommended that effort be made to clarify in the minds of all weights and measures officials that it is proper to use a prepackaging scale, to put up properly labeled packages, while a customer is in the store. The Scale Manufacturers Association has pointed out that some

jurisdictions have interpreted regulation paragraph R.18. of the Scale Code as prohibiting the use of a prepackaging scale to weigh and compute the price on a properly labeled package ordered by the customer while in the store.

It is the opinion of the committee that this is a proper use of a prepackaging scale, so long as the package is properly labeled to meet all legal requirements for commodity in package form. In order to further clarify the intended meaning of regulation paragraph R.18., the committee has recommended an amendment to regulation paragraph R.18. (see item 2, page 84 of this report).

4. *Money-Value Tolerance on Computing Scales.*—It was recommended that this problem be further clarified. The Scale Manufacturers Association advises the committee that some jurisdictions continue to demand that, even though there be a weighing error in a computing scale that is within allowable tolerance limitations, the money-value graduations be required to give correct value indication. This, it was pointed out, is a physical impossibility owing to the design and construction of conventional computing scales.

This matter was called to the attention of the committee in 1951. At the committee's suggestion, the secretary of the committee prepared an article explaining the proper procedure for checking the money-value graduations on a computing scale. This article follows, as a part of this report.

It has been disclosed that in some instances a misunderstanding exists among weights and measures inspectors as to the proper method of checking the money-value graduations on a computing scale chart.

In order to establish proper and uniform test procedures, weights and measures officials should follow National Bureau of Standards Handbook H37, entitled TESTING OF WEIGHING EQUIPMENT. On page 147 of this handbook, under the heading "Computing Type," is found the following:

Note:—The weighing portion of a computing scale is to be tested in the same way as has been outlined for a noncomputing scale of similar type of construction.

The money-value graduations on a computing-scale chart are fixed in relation to the weight graduations when the chart is made. As part of the routine test of a scale it is practicable to check only a few out of the hundreds or thousands of value graduations on the chart. It is advisable, however, at least to check the zero-load indications for both weight and money values and to check the money values at some one load (representing half-capacity or more) clear across the chart, to make certain that the computed money values agree with the prices-per-pound which are shown, and that the chart is mounted in proper alinement.

It should be understood that the money-value graduations are *not* independent of the weight graduations and, therefore, cannot be tested independently. The weight graduations should be tested with known weights placed on the load-receiving element of the scale. The money-value graduations should be checked against the indicated weight graduations. It is improper to place a known weight on the scale and expect all money-value indications to be correct without regard to any weighing error which might exist. Specifically, to check value graduations, first establish *exact* coincidence between the indicator and some even-pound weight graduation—for example, the 10-pound graduation. Then check the correctness of the value indications in the several columns of value graduations; in the example, each value indication should be precisely 10 times the unit price-per-pound for the column in which it is found.

The committee recommends that all weights and measures officers adopt this test procedure for use in their jurisdictions.

5. *Tolerance at Zero.*—It was recommended that a tolerance at zero be recognized.

The matter of a "tolerance at zero" for scales has been brought up from time to time over the years for committee and Conference consideration. It has never been deemed necessary or advisable to allow a special tolerance at zero for weighing scales. The committee has never observed a need for tolerance at zero because (1) a regulation of the Scale Code directs that the operator of a scale shall maintain the scale in balance, and (2) properly designed weighing devices will repeat their zero indication to readable limits.

The committee wishes to retain this item on the committee agenda for further study.

6. *Tare Graduations back of Zero on Prepackaging Scales.*—It was recommended that graduations back of zero on prepackaging scales, distinctly different from the graduations forward of zero, be permitted.

The Committee on Specifications and Tolerances issued an interpretation on this subject in 1951. The interpretation was rendered in response to the recommendations received from the Southern Weights and Measures Association and was included in the committee's final report to and was adopted by the 36th National Conference on Weights and Measures. It is recorded, beginning on page 106 of National Bureau of Standards Miscellaneous Publication 202, Report of the 36th National Conference on Weights and Measures, 1951. In substance, this interpretation was that graduations "back of the zero graduation" must be uniform with those "forward of the zero graduation."

The committee wishes to retain this item on the committee agenda for further study.

7. *Larger Price Values for Computing Scales.*—It was recommended that money-value graduations of 5 cents for prices in excess of \$1.50 per pound be allowed on computing scales.

The committee feels that such a liberalization of requirements would be a step backward. It would result in larger errors in price computations. Commodities selling from \$1.50 to \$3.50 per pound are usually sold in small quantities. To meet fully the demand for proper weighing and price computation in this area, scales of relatively small capacity, good readability, and high sensitiveness are necessary. It is the opinion of the committee that serious effort should be made by representatives of the scale industry to provide proper scales for this important service. This should be done rather than to relinquish requirements on devices that were not originally designed for this specialized use. It is the committee consensus that present requirements are reasonable, adequate, and proper, and it is recommended that the 44th National Conference take no action on this recommendation.

The Conference Committee on Specifications and Tolerances acknowledges, with gratitude, the splendid cooperation of active mem-

bers, advisory members, and associate members of the National Conference. It is the aim of the committee to represent honestly the Conference body. This aim can be fulfilled only with the full assistance of all parties at interest.

J. E. BRENTON, *Chairman*
V. D. CAMPBELL
C. O. COTTOM
C. L. JACKSON
D. M. TURNBULL
W. S. BUSSEY, *Secretary*

(On motion of the committee chairman, seconded from the floor, the report of the Committee on Specifications and Tolerances, as amended on the floor, was adopted by voice vote.)

[NOTE: Following the adoption by the Conference on Thursday afternoon of the revised Model Law as recommended by the Conference Committee on Laws and Regulations, which law included the provision for an additional size container for milk and other fluid dairy products, Mr. Brenton, Chairman of the Conference Committee on Specifications and Tolerances, moved that that committee be authorized to make appropriate entries to the Milk Bottle Code and thus provide performance requirements for the 10-ounce milk bottle. This motion was adopted by voice vote.]

FIFTH SESSION—AFTERNOON OF THURSDAY, JUNE 11, 1959

(C. H. STENDER, VICE CHAIRMAN, PRESIDING)

THE FEDERAL TRADE COMMISSION, ITS AUTHORITY, ITS ACTIVITIES

By C. R. MOORE, *Legal Adviser on Deceptive Practices, Bureau of Investigation, Federal Trade Commission.*

GENERAL

In my comments this afternoon I shall be expressing my personal views and shall not be speaking or expressing the official views of the Federal Trade Commission.

The Federal Trade Commission was created by the Federal Trade Commission Act in 1914. It consists of five members, not over three of which can be of one political party. It is headed by a chairman, who not only presides over Commission meetings and votes as a Commissioner, but bears primary responsibility for managing the operations of the agency. Commissioners are appointed by the President of the United States and are confirmed by the Senate. Appointments are for 7-year terms and are so staggered that most of the body are at all times experienced members. Experience is important because in performing its statutory functions the Commission has wide jurisdiction and profound effects on the economy of the Nation. The Commission not only rules on the law but the organic Act provides that if the Commission's findings as to the facts are "supported by evidence" they are conclusive, i.e., the courts cannot change them. The Commission is a quasi-judicial, administrative body. In its judicial functions, the Commission serves somewhat as a specialized United States District Court. Therefore, appeals are directly to the U.S. Circuit Court of Appeals.

The Commission now has about 720 employees. It has highly specialized staffs. There are about 300 lawyers, a sizable staff of economists, accountants and statisticians, a small but very efficient scientific staff of physicians and chemists, and other personnel that serve ancillary purposes. The agency's annual appropriation runs in the neighborhood of \$6 million. There are nine branch offices strategically located throughout the continental United States and textile inspectors are located in various other States.

LAWS IT ADMINISTERS

The Commission's regulatory efforts are broadly divided into two fields, i.e., monopoly and deceptive practices. Since my comments will deal principally with the latter, I will here touch very lightly on the monopoly field in order that you may more fully appreciate the Commission's authority and activities. It is in the monopoly field that the greatest expenditures of funds and efforts are made. The agency's jurisdiction in that area derives from section 5 of the Federal Trade Commission Act and the Clayton Act. Section 5 of the F.T.C. Act has been held to generally prohibit conspiracies in restraint of trade.

CLAYTON ACT (1914). The amended Clayton Act prohibits certain practices that may substantially lessen competition or tend to

create a monopoly, such as discriminations in price, services, commissions and allowances granted by individual sellers of commodities that are not justified by differences in cost and manufacture, sale or delivery resulting from different methods or quantities in which such commodities are sold or delivered. This Act also prohibits corporations from merging where the effects of such merger may substantially lessen competition or tend to create a monopoly.

Monopoly cases require more investigative effort than do deceptive practice cases. For this reason, and the fact there are more violations in the deceptive practice area, by far the greater number of corrective actions are in the deceptive field.

Now, let us revert to the principal subject of deceptive practice regulations for I believe it is there that your interests principally lie.

A greater appreciation of the regulatory efforts of the Commission in this area is to be had if you keep in mind a few major principles. First, the Commission is empowered to proceed only when it appears that the interest of the general public, as distinguished from private interests, will be served. It therefore follows that the Commission does not have the authority to attempt settlements of private controversies or, generally speaking, to inhibit practices affecting only a few. Second, that in any formal proceeding, the Commission being the moving party, must bear the burden of proof. Third, that the practice in question must be engaged in interstate commerce. The Commission does not have jurisdiction over matters merely affecting intrastate commerce.

FEDERAL TRADE COMMISSION ACT (1914). Sections 5 and 12 of the F.T.C. Act are the chief weapons with which the Commission endeavors to prohibit (1) unfair methods of competition between business concerns and (2) deception of the public by business firms.

Section 5 states that "Unfair methods of competition in commerce, and unfair or deceptive acts or practices in commerce, are hereby declared unlawful." As originally enacted, in 1914, the law prohibited only unfair methods of competition. The remainder of this section, which is the direct public protective portion, was not enacted until 1938.

Congress wisely left to the Commission, a body of experts, the task of defining unfair methods of competition and unfair and deceptive practices, based on continuing experience and the changing phases of business endeavor. Human ingenuity, strongly inspired over a long period of time by the profit motive, has been productive of good that exceeded the world's imagination, but with this has also come many ingenious, unethical plans of promotion. As these situations arise, it is the duty of the Commission to proceed to protect ethical business and the general public.

Section 12 has specific application only to foods, drugs, devices and cosmetics and its purpose is to extend jurisdiction of the Commission where those products are involved. Motivation for this enlargement was a consciousness on the part of Congress of the need for greater health protection in advertising. Roughly speaking, it may be stated jurisdiction over advertising of these classes of products exists where either the advertisement or the product is disseminated in commerce. This section relates only to advertising, not to labeling. The broad provisions of section 5 of the F.T.C. Act cover both labeling and ad-

vertising of commodities generally, including foods, drugs, devices and cosmetics. However, in the interest of avoiding duplication of effort, regulation of labeling of these four classes are, through liaison arrangement, generally left to the Food and Drug Administration, which has primary responsibility in that area.

Sections 13 and 14 of the Act provide injunctive and criminal remedies in certain types of advertising of foods, drugs, devices and cosmetics. Section 15 is essentially a declaratory section.

A few examples of numerous unfair and deceptive practices inhibited by the Commission under the FTC Act are:

(1) Misrepresentation of second hand goods as new, imitations as genuine, goods that are charged for as being free, the terms of offers or guarantees, composition of goods, business status, the origin of goods, the value of correspondence school courses, fictitious prices and quality of merchandise, disparagement of competitors and their products, palming off the goods of one as the goods of another, etc.

(2) Misrepresenting the purity, remedial, cosmetic or nutritional properties of foods, drugs, devices or cosmetics.

False and misleading advertising is, of course, covered by these sections and the regulation of that alone requires much effort. It is estimated that there is over \$9 billion spent annually in advertising. A special unit of the Bureau of Investigation constantly studies radio, television and other advertising in an effort to detect and stop the more obvious false advertising in its incipency. Other staff members are also instructed to be on the alert for and report any apparent violations they may observe in their reading of newspapers and magazines and listening to radio and television. I might add here that the falsity of some advertisements is not apparent on their face and some that appear false are not false, or scientific evidence is not available to demonstrate their falsity.

Time does not permit of much elaboration on these broad classifications but I can mention a few recent cases that may be of interest to you. A leading sewing machine manufacturer was recently found selling used sewing machines as new machines. We had a series of cases involving the sale of reprocessed, used motor oil as new oil. Hundreds of thousands of radio and TV tubes that were below standard, or used tubes, were either removed from the market or properly labeled. Fictitious pricing has been a major problem and the source of much staff and Commission effort in the past several months. The Commission has issued guides to its staff dealing with this subject and those guides have had very wide circulation in the business community. The Commission is using all methods at its command in an effort to deal with this problem. There have been over 450 corrective actions by the Commission involving misrepresentations and deceptions by correspondence schools alone. Every time corrective action is taken involving such schools, State and Federal educational authorities, the Veterans Administration, which administers the so-called "GI Bill of Rights" educational program, and other interested persons and authorities are provided with orders of stipulations evidencing the action taken.

"Slack filling" is occasionally involved. That is where the package, either through appearance or otherwise, misrepresents the amount of contents thereof. One instance I recall involved a distributor of children's color crayons placing two less crayons in the box than was stated on the outside thereof. A year or so ago, a distributor of cans

of artificial snow was enjoined from using cans of a size or capacity in excess of that reasonably required for packaging the quantity of product actually contained therein. It has been noted the contents of some packages shake down considerably and although they may appear to have been incompletely filled, the package was full when it left the packaging machine.

In the second category mentioned above (sec. 12, foods, drugs, devices and cosmetics), there is intense promotion. In the cosmetic field, appeal is to vanity and in the food, drug and therapeutic device area, appeal is to concern for health. The power of suggestion is very effectively employed in all advertising media.

The case that most impressed me in this area involved a man, who held the degrees of doctor of medicine and Ph. D. in chemistry, selling two products that were found, on analysis, to consist of distilled water, at \$15 and \$25 a cc for treatment of the so-called incurables, i.e., diabetes, cancer, epilepsy, etc. A shot was to be taken and the patient was to wait a year for the cure. Results of such delay are obvious.

In another instance a concern in California was engaged in the business of selling filtered sea water as a treatment for 56 diseases and symptoms, including Bright's disease, heart trouble, poor eyesight, bowlegs, diabetes and cancer.

LANHAM ACT (1946). The Lanham Trademark Act has one provision in section 14 which confers authority on the Commission to apply for cancellation of trademarks from the principal register of the Patent Office for some 12 grounds specified in subsections c and d of that Act. Briefly stated, this section provides that when a trademark has been obtained by a fraud or has been abandoned or has become restricted and therefore, for these reasons, should not remain on the register with the right of exclusive use in the register, the Commission may ask that the mark be removed.

McCARRAN ACT (1945). The McCarran Act confers on the Commission very limited jurisdiction to regulate the advertising of insurance in interstate commerce.

TRUTH IN FABRIC STATUTES

WOOL PRODUCTS LABELING ACT (1941). This Act makes specific provisions regarding the disclosure, on labels, of the contents of wool products or products represented to be wool products. This is an example of a statute that might, roughly speaking, be said to have arisen as a result of the giving of short weights and measures. Wool content of wearing apparel and other products were being substantially misrepresented and the Federal Trade Commission Act did not appear to be adequate to deal with all phases of this practice. First, there was the representation that a product which contained a small amount of wool was principally or entirely made of wool. There was also the practice of misrepresenting reprocessed and reused wool as virgin wool. Later fabrics consisting of manmade fibers came on the market and they bore such a resemblance to wool that they could easily be passed off as wool. The Wool Act provides that every wool product introduced into or manufactured for introduction into interstate commerce must bear a label which fully states the composition of the product, in percentages, and identify the manufacturer or other person or concern that has shipped the product in interstate com-

merce. This tag or label must accompany the product until it is sold to the customer. A very large portion of our cases in the deceptive practice field still involve misbranded wool products.

FLAMMABLE FABRICS ACT (1954). I am sure you will recall that a few years ago a number of instances arose where children's cowboy suits, scarves and the like were found to be highly flammable. The Flammable Fabrics Act, in effect, prohibits the introduction into commerce of fabrics that do not meet with certain standards as to flammability. The standards of flammability are defined in Commercial Standards 191-53 and 192-53, promulgated by the Secretary of Commerce in January and May, 1953, respectively. Now, there is constant surveillance of fabrics and plastics by the Commission's staff.

TEXTILE FIBER PRODUCTS IDENTIFICATION ACT (1958). This law has specific provisions regarding misbranding and false advertising of fabrics generally. It was passed on January 7, 1958, and takes effect March 3, 1960. Rules and Regulations under this statute are to be promulgated on or about June 3, 1959.

FUR PRODUCTS LABELING ACT (1952). A situation developed in the fur products industry similar to that just outlined in the Wool Products Labeling Act. While the Federal Trade Commission Act was of considerable assistance in dealing with the forms of deception in this industry, it was not the complete answer. Prior to the passage of the Fur Act fur garments made of hundreds of small pieces were skillfully sewed together and otherwise finished to present the appearance of having been made from whole pelts. There was no disclosure of this fact. The only sure way for a prospective buyer to learn this was to rip open the lining and look at the back surface of the fur. Of course, that was not generally permitted. A garment made from inexpensive pelts was often passed off as having been made from a more expensive fur. An example was the labeling of coats made from muskrat pelts as seal coats. Even wool and rayon fabrics were finished to look like furs and passed off under names that suggested they were genuine furs. This Act relates to labeling and advertising but the Wool Act covers only labeling. A substantial number of violations yet arise involving furs but the more flagrant violations do not often occur.

PROCEDURES. The Commission employs several procedures in enforcing these statutes.

Where the most serious violations are involved, or the less stringent procedures would not appear to be effective, formal complaints and orders to cease and desist are utilized. The Commission has had approximately 7,480 formal proceedings of this type. Orders to cease and desist are enforceable by civil penalty. Where the gravity of the violation does not necessitate formal proceedings and the business concern under investigation is cooperative, stipulations to cease and desist are accepted from the alleged violator. The Commission has accepted approximately 9,167 such stipulations. Orders to cease and desist and the substance of stipulations are made public. A larger number of lesser matters, in recent years, have been settled by the acceptance of a letter or affidavit in which the concern involved stated it had discontinued the practice without intention to resume same and furnished proper evidence thereof. Of course, investigation is necessary before any proceeding of a corrective nature is initi-

ated. The Commission's Bureau of Investigation normally has a case load of some 1,200 to 1,400 cases.

Another procedure employed is trade practice conferences. One hundred and sixty-two (162) industries have come together under Commission auspices and adopted trade practice rules for their industry. These rules purport to incorporate the substance of the above-mentioned laws as they apply to these industries.

A related method of proceeding has recently arisen called "Guides". The Commission promulgates Guides for the guidance of its staff in dealing with a particular practice or industry and these Guides are given wide circulation in affected industries.

A Small Business Division of the Commission's Bureau of Consultation is set up to render staff opinions on the legality of specific business practices. A concern wishing to receive advice regarding the legality of practices it contemplates employing can call on this Division for its opinion. Of course, such opinions are not binding upon the Commission. This is another service that is provided in an effort to obtain compliance with the laws administered by the Commission.

How Invoked. Corrective actions by the Commission, on matters of merit, may be set in operation by the Commission's own motion or upon informal complaint filed by an individual, or concern. This protection is open to all, without cost, need for counsel, or even public disclosure of the identity of complaining parties.

In conclusion, it should be pointed out that the Commission probably bears the greatest responsibility of any agency of the Federal Government for affording protection in the market place to the consuming public and to legitimate enterprises. These are not laissez faire statutes. That philosophy is inconsistent with their purposes.

DISCUSSION OF FOREGOING PAPER

MR. LEITHAUSER: Would you please distinguish between the term "the general public" and what is categorized as "a few people" as to the protection afforded by the Federal Trade Commission?

MR. MOORE: That has been clearly defined by a Circuit Court of Appeals, not in specific number, but in approximately this language. The Court said that the public interest must be clear and substantial—that is, a substantial number of the public must be affected. There is no clear line of demarcation. If a product is being sold that is injurious to health, obviously the adverse effect upon a few would constitute the requisite public interest.

An example might be that, if an advertisement is misunderstood by, say, 50 of the millions of people who read it, it would probably not constitute "public interest," because one cannot absolutely eradicate misunderstanding.

In business, if one person is unfairly competed with by others in interstate commerce, the public would be adversely affected.

MR. LEITHAUSER: Would you construe a price war in a single locality as affecting the public interest?

MR. MOORE: There would probably be sufficient public interest; however, let me make it clear that our jurisdiction covers only those areas of business and commerce that are in interstate commerce.

MR. JACKSON: I am interested in your method of control of fictitious comparative pricing. What effect will your enforcement have on the whole empire of discount houses that give comparative prices?

MR. MOORE: Comparative prices *per se* are not actionable, but deceptive comparative prices are. We are devoting considerable attention to this matter at this time.

MR. LEVY: I have been concerned with what appears to be slack filling by certain concerns of food items. For example, a popular item on grocery shelves is that of chicken and broth marked "3½ pounds." I know from actual tests that the chicken averages around 1¼ pounds, the remainder being liquid filler. We have encountered this same situation in other foods, including a number of types of vegetables. Would you consider this proper labeling of canned foods?

MR. MOORE: First, I would say that under section 5 of our Act, the Federal Trade Commission does have jurisdiction over matters of this kind, but, under license arrangements with the Food and Drug Administration, which has primary responsibility in this area, we do not regulate, generally speaking, the labeling of a food, drug, device, or cosmetic. Complaints in these areas would be more appropriately addressed to the Food and Drug Administration.

MR. LEVY: We were recently called in on a complaint regarding bed sheets. It seems that sheets are labeled as to size—that is, length and width—before the sheets are hemmed. This causes an actual delivered size considerably shorter than the labeled size. We are informed this is a general practice. Would such a matter come under your jurisdiction?

MR. MOORE: Any practice which constitutes a misrepresentation of goods in interstate commerce would come within our jurisdiction. There is one question—is this a generally recognized practice, recognized by both suppliers and purchasers of sheets? If it is, such as, for example, lumber, where a 2 by 4 board actually measures considerably less than 2 inches by 4 inches, we probably would not rule it misrepresentation.

FROM JOHN QUINCY ADAMS TO MADISON AVENUE, U.S.A.

By DEXTER W. MASTERS, *Director, Consumers Union of U.S., Inc., Mount Vernon, New York*

There are times when it must seem to most of you, as I confess it sometimes does to me, that working in the field of consumer problems and consumer education is pretty dull business. Even when we do achieve a goal it most often comes by the old tortoise technique—putting one patient foot in front of the other. In the meantime, the high-living, fast-talking hares—by which I mean sellers—have had all the fun, filling their pockets with fast bucks. Even when we do win a victory on the consumer front, our achievement is not always welcomed with wild applause and loud acclaim from a grateful public.

But it is not frustrations that I want to talk about here. What I want to do is to ask you to take, for a few moments, a mountain range view of the work you people are doing and of what may be ahead in your special field of responsibility. I want to touch very briefly on how, over a long span of years, the point of view—the philosophy—that underlies the whole weights and measures administration may be taking on a deeper significance. And I want to indicate how much I feel is now at stake in preserving that philosophy through the rapid changes that are taking place in the consumer goods market today.

The daily chores of administering a regulatory program—the need for putting one foot patiently in front of the other—tends to keep one's

eyes turned downward. And it is not only in the performance of administrative tasks that blinders can operate to conceal reality. There is an interesting and instructive example from history to guide us here. I am sure you all remember reading about the European merchants who clipped, chipped and filed down the gold coins that crossed their counters some 200 to 400 years ago. I doubt that any of them was aware of *all* that he was up to. He undoubtedly knew that what he was doing might be called—if you wanted to be harsh about it—stealing. He also probably knew that nearly everybody else was doing it. But it is not likely that he was aware that he was contributing to an economic chaos that all but wrecked the economy of his country. And it took a long time for the society of that time to realize what had happened and to sum up the effect of these small, individual thefts in what we know today as Gresham's Law—the dictum that bad money drives out good. What I want to dwell on today is the possibility that we may be facing a kind of Gresham's Law in the weights and measures field.

The big trouble with attempting to evaluate accurately the practices of men in the market place is that the vast majority of commercial transactions take place at a single pinpoint of contact—between a buyer and a seller. In the multiplication of these myriads of actions, however, there lie great consequences. You might say that each of these millions of small transactions is a kind of economic atom. And like some other atoms they can produce a chain reaction, not always easy to predict or to assess. Sometimes the assessment comes too late for controls to be applied.

I think it is urgent at this particular moment in history to project into the near future some practices that are developing rapidly—practices which may propel you who are working the field of weights and measures into much bigger and much more difficult problems soon.

In the best tradition of public speakers, let us move forward by looking backward—in this instance to the year 1821. That was when John Quincy Adams was Secretary of State, and that year he gave his classic “Report Upon Weights and Measures” to the Congress. I am sure you are all familiar with his words, but let me quote you a fragment from them. John Quincy Adams said: “Weights and measures may be ranked among the necessities of life to every individual of human society. They enter into the economic arrangements and daily concerns of every family . . . The knowledge of them as established in use”—(and I want to emphasize that phrase “*as established in use*”)—“is among the first elements of education, and is often learned by those who learn nothing else, not even to read or write. This knowledge is riveted in the habitual application of it to the employment of men throughout life.”

With John Quincy Adams' evaluation of weights and measures as “among the necessities of life” we can all here agree. But, unfortunately, it is no longer true that “knowledge of them as established in use is among the first elements of education.” Nor is it any longer true that this knowledge is riveted in practice or is held by those who cannot even read or write. Today, unfortunately, knowledge of weights and measures is all but lost to many consumers—consumers who can read and hear—who read the slogans of advertising, or the big type on a gaudy package, and who read and hear the commercials over television.

Back in 1821 the relationship between producers and consumers was more intimate. Furthermore, as a seller of his own farm produce or a vendor of products of his special handicraft—which he usually was—the consumer of those days carried over into the marketplace his producer's knowledge of, and concern for, weights and measures. Thus an understanding of the consumer's right to honest measurements of quantity was underwritten by the producer's dependence on these measurements as established in use for both consumer and producer. Not that all was sweetness and light in those days. Tricks of the trade are as old as trade itself. But the consumer was more aware of the trickery and better able to use his knowledge of standard measurements as a tool of defense.

In the very first paragraph of the official history of the administration of weights and measures of this country—a book written some 30 years ago, with which I am sure you are all more familiar than I—there appears a one-sentence summation of what, at bottom, the weights and measures effort is all about. Those few words struck me forceably. I want to repeat the sentence to you: “The primary function of the weights and measures official,” it reads, “is to see to it that equity prevails in all commercial transactions involving determinations of quantity”—equity, equal opportunity to know, equal opportunity to bargain, equal rights to fair dealings in commercial transactions involving “determinations of quantity.” Obviously, without equity in this basic area of exchange, the door is wide open to chicanery. And this is what I was referring to when I emphasized how much is now at stake in preserving throughout commercial transactions the philosophy that underlies the whole weights and measures effort. That philosophy of equity, which must have seemed in Adam's time like an elaboration of the obvious, falls with a fresh ring on our ears today.

The philosophy of equity with regard to quantity was formulated before the packaging of goods had become a selling device. In John Quincy Adams' day, packaging was utilitarian. In fact, the great majority of goods was not packaged—that is, it was not prepackaged—at all. It was carried home in tailor-made quantities that had been measured to the individual's demand, as expressed in those weights and measures terms which, as John Quincy Adams said, were known from daily use. But today's goods are increasingly prepackaged. And packaging has left its work-a-day function to become a Madison Avenue darling. The promoter, not the weigher or the measurer, now packages most of our goods. The determination of quantity in transactions involving the consumer has been removed from the scales on the retail counter to the merchandising department of a brander. There is no longer a face-to-face relationship in quantity determination between ultimate purchaser and seller. Instead, there is the package. As one commentator in the magazine *Industrial Design* so succinctly put it: “The package designer makes the consumer an easier mark.”

Out of the trade literature in what is now referred to as the field of scientific packaging, I could quote to you for hours from advertisers, package designers, or merchandisers, expressions of opinion which emphasize that, from the commercial point of view, equity in determinations of quantity today is an almost forgotten precept.

There is neither time nor need for many references to such statements here, but they *are* illuminating. Let me give you a few examples:

Listen to this from the advertising trade paper *Printer's Ink*. The quote, attributed to a member of a *Printer's Ink* Packaging Panel, reads: "If merchandising in 1968 is to avoid taking on frightening shades of Orwell's 1984, the package designer will more than ever have to concentrate on reaching the consumer through her emotions." (The fears refer, I gather, to the possibility of standardization of package sizes.)

Here is another comment, this one from a large food advertiser: "We are not selling products these days as much as we are selling packaging."

Here is another from a package designer as quoted in a recent *Wall Street Journal*: "Thousands of packages that silently scream for the customer's attention do the selling in today's supermarkets." The *Journal* led off the story which included this quote with the statement that: "Boxes, bottles, and bags rapidly are replacing more and more salesmen in United States stores."

An official of the Container Corporation summed up the matter by saying: "I think it is necessary to stress that package design cannot be conceived of in any other way than as a part of the total advertising strategy." And *Business Week* carries that view further: "Change your package as often as you switch your advertising copy."

To what end is this total advertising strategy directed—the strategy that is now to dominate the packaging upon which we must depend for equity in determination of quantity?

Advertising as we have known it abundantly over the past quarter of a century has dealt primarily with the qualities of goods. Its reiterations have drummed on words like "best," "newest," "whitest," "latest," "freshest," and so on. There was a time, just after the first World War, when the theory of the function of advertising was that it reduced the cost of goods by creating the mass market necessary to low-cost mass production. But that is no longer the theory of the function of advertising. The accepted theory today, accepted by the advertising profession, was enunciated fairly recently in a book titled "Madison Avenue U.S.A.," written by Martin Mayer and hailed in the advertising trade press as the intelligent answer to the growing criticisms of their profession. Here is how Mr. Mayer defines advertising's economic *raison d'être*: "The function of advertising," he writes, "is to add new value to the existing values of a product." He elaborates his view with an example that leaves no possible doubt of what he means. He says: "This added value (the value added by advertising) is most obviously apparent in the case of a soda pill, a placebo, which is advertised as a headache cure. The pill itself has virtually no value; but it will actually cure the headaches of a number of people who take it. The suggestion power of advertising has created a value for a worthless product."

Now, it is within this strategy of creating value through the power of suggestion, that the practitioners of the new packaging science are proclaiming their competence. And, as you men in the weights and measures program have known for many years, it is no idle boast they are now making. It is all too easy to create false illusions through packaging. That is why our weights and measures laws have long contained such provisions as this one: "It shall be unlawful . . . to

offer for sale any commodity in package form if its container is so made, formed, or filled, as to mislead the purchaser as to the quantity of its contents." And that is also why these laws have long stipulated that it shall be unlawful to offer any packaged commodity for sale "unless the net quantity of the contents be plainly and conspicuously marked on the outside of the package."

The clearest evidence that the new science of packaging is, indeed, what its practitioners so openly proclaim it to be—an intent to evade existing law—is found in the way in which this latter and unambiguous requirement in the law is honored by today's packages. I do not have to tell you here that it is rare to find a package, no matter how large, on which the net contents information is in a type larger than 6 point—about the size of a telephone book listing. Many packages use even smaller type for this information. And, not only are the net contents on many of the newest packages in type too small to be seen, but frequently even this tiny type is hidden—printed in black on dark blue or dark red, or put on box top flaps. But the same package designers who thus minimize this information vital to equity in determination of quantity proclaim the need for new packaging on the grounds that, as one spokesman at a packaging symposium put it: "A total of 34,000,000 women either don't have glasses and should, or have them and won't wear them in public."

What bothered this particular spokesman was, as he lamented: "This has not been considered in many package designs which carry lengthy sales messages in small type."

A proposal has recently been made by the Canadian Food and Drug Administration that the net contents must be placed on every package just beneath the brand name and in a type no smaller than half the size used for the brand designation. Needless to say, this suggestion has stirred up outraged protests from branders. But until some such further definition of "plain and conspicuous" is written into the law, it appears that the lawyers available to the packagers will be able to continue to obtain court immunity for violators. The package designers apparently don't tell the legal defenders about their research into the subject of women's eyesight; or anyway, this information apparently does not reach the ears of the courts of the land. Court decisions on slack fill or misleading packaging have about nullified the law on these points.

Obviously, in the light of existing law and court decisions, the problem of fraudulent packaging is not new. What *is* new is the rapidity with which nearly all goods are being sold in prepackaged form, on the one hand; and, on the other, the open defiance of law on a wholesale scale by the packagers. And just ahead of us, practically upon us, is the prospect that any remaining vestiges of shopping experience by which a consumer may be guided through this new land of package illusion may be destroyed.

In addition to paper, tin and glass, food, for example, is available now in plastics, glassine wraps, foil, lustre finishes, scented paper, water glasses, aluminum, vacuum pouches, boil-in-the-bags, baking tins, fibre containers, flour sifters and pressure cans—to name just a few of the materials and shapes. As for sizes, instead of the old, *established in use* fractions of the pound or pint, the sizes now range from such designations as 1 and $\frac{5}{8}$ ounces to such nonsense quantities as: 6 and $\frac{1}{4}$ ounces to (simulate the half pound) through 19 and $\frac{3}{4}$

ounces (to simulate the pound and a half) up to the giants among detergents with ridiculous net weights ranging from 256 to 368 ounces and with the slack fill of these marketing monsters given over to dinner ware and bath towels.

What would John Quincy Adams say today? Where would he find "established in use" those necessities of life that enter into "the economical arrangements and daily concerns of family life"?

And what has become of the idea that equity should prevail in all commercial transactions involving determinations of quantity?

Moreover, however difficult the immediate, present situation seems, we must brace ourselves for a worse one. If the trade press predictions are to be trusted, within less than a few years we will be inundated with aerosol products. Already available in aerosol form are such goods as: toothpaste, chocolate topping, perfume, toilet water, vitamins, coffee, paint, detergents, insecticides, and whipped cream. Soon to be marketed in aerosol form are baby foods, salad dressings, mayonnaise, jams, cheese dips, meat spreads, starch, hair shampoos and maple syrup. I need not detail for this sophisticated group the problems raised with respect to the philosophy of equity by this influx of aerosol products.

But I don't want to close on a hand-wringing note. The very chaos that seems to lie just ahead has brought in some allies for those of us who are still concerned about equity in determinations of quantity. Even within advertising there are a few voices, like that of a marketing specialist who was quoted in *Advertising Age* as saying: "I just don't believe it . . . that packaging is advertising. People still want the best possible food for the lowest possible price and the suspicion that over-packaging is jumping the price of food unnecessarily is voiced by more and more people today."

You and I here know that that suspicion is well-founded when a new package can, for example, better than double the price of sale—raise it from 1/2 cent an ounce to over 1 cent an ounce as happened recently when Leslie Salt brought out its new shaker-container package. And there are other ways in which this packaging mania is costly, as the supermarket operators know. One of the most valuable assets to merchandising is shelf space. And the needless variety of packages, together with the slack filled packages, is undoubtedly stealing millions of dollars worth of shelf space from other products whose producers are unable to raise the capital to allow them to spend \$10,000,000 to market an illusion as well as a product. Here is another ally for equity in determinations of quantity—the smaller-business man.

As for the farmer, whether he knows it yet or not, this packaging revolution has had a good deal to do with his rapidly shrinking share of the consumer's food dollar.

Let me urge you here to take a more vigorous lead in a drive for legislation to establish standardized sizes for all food containers—a proposal that, I know, has been dear to you for some time. And also let me urge that you give serious consideration to legislation requiring something along the line of the Canadian proposals to clarify the meaning of clear and conspicuous declarations of net weight contents.

For if this tide of deceptive packaging is not stemmed, then, as in Gresham's Law for debased currency, the bad packaging will surely drive out what remains of the good.

MR. SLOUGH: I have long been a subscriber to Consumer Reports and have found very little reference to quantity as it affects the consumer. Do you plan to include "weights and measures" items in your publication in the future?

MR. MASTERS: Yes. We are making firm plans to give more weights and measures information to our readers.

MR. MORTON: With respect to your comment about the loss of shelf space to a retailer that is brought about by packages larger than necessary for the contents, do you know whether the various chain and independent grocery associations have considered this?

MR. MASTERS: I believe some store operators have expressed a concern. The retail trade papers have editorialized about false packaging, but the individual operator apparently has felt that he has no choice but to handle brand products, and, when such products are in oversized packages, he must accept and display them.

MR. GRASSI: The State of Connecticut has recently established a department for consumer protection. I am wondering whether other States are showing interest in such agencies.

MR. MASTERS: I am very much in favor of such departments of State government. A similar law has been passed in California, and I understand that interest is developing in Minnesota, Michigan, and Massachusetts. As you may know, a bill has been introduced in the Congress of the United States that has as its objective a department for consumers.

WORKING TOGETHER FOR THE CONSUMER'S PROTECTION

By J. L. HARVEY, *Deputy Commissioner of Food and Drugs, Department of Health, Education, and Welfare*

It is a pleasure for me to attend this 44th National Conference on Weights and Measures and to have this opportunity to talk to you. Without the conscientious, painstaking day-by-day efforts of State and city officials to insure, at the local level, that merchandise comes up to the weight or measure claimed for it, the problems of our Administration in enforcing the provisions of the Federal Food, Drug, and Cosmetic Act would be much greater and more difficult than they are. If we are to protect the interests of the consumer, it is not only essential that we maintain a day-by-day working relationship but we should get together from time to time as we do on this occasion to take counsel how to make our efforts more efficient, more effective, and more responsive to the requirements for consumer protection. The Annual Conferences on Weights and Measures have made outstanding contributions toward this goal.

However, the task before us is one that continues to grow in magnitude and complexity. With the phenomenal growth in population that has taken place in our country in the last 50 years, not only has the absolute volume of food and other commodities coming within our jurisdiction increased in a most spectacular fashion, but, as we all know, methods of distribution have been revolutionized. From the dawn of commerce until our own time practically all weighing and measuring took place at the time of sale in the presence of both the buyer and the seller. Each had the opportunity to assure himself

that the quantity of material bought, or sold, was exactly that agreed upon, assuming the accuracy of the balance and weights or of the measuring cup used. It is true that these were not always accurate and it has long been the primary duty of sealers of weights and measures to detect and eliminate from the marketplace such faulty devices. But today when practically every food, as well as most other merchandise, is sold in prepackaged form the retail purchaser is not present when the article he or she buys is weighed. On the contrary, this operation may take place a continent's breadth away in space and a season before in time. There is no one present at the time to furnish the searching scrutiny, that the buyer used to give, to see that the scales do balance or that the measure is full. So it becomes increasingly an obligation of control officials to make sure that the consumer's interest in the transaction is safeguarded.

The revolution in the distribution of food has brought other changes also. It has brought mass production, with giant manufacturing and distributing agencies; it has brought fierce competition where only the most efficient may hope to survive; and with the efficiency have come the most searching cost accounting methods. These have revealed and have emphasized that if the package contains a quantity, however small, above that declared on the label, the resulting economic loss, when multiplied by the astronomical figures that represent the volume of modern production, becomes a truly substantial sum of money. By the same token, if the package contains a quantity that is much less than the declared amount the consumer stands to have that substantial sum taken from him wrongfully. Industry is constantly under competitive pressure to work as close to the declared weight as possible. This is understandable, but with no margin for error it inevitably increases the chance for short weight and short volume to occur. That this is more than a possibility is a demonstrated fact, as I will illustrate.

From time to time over the past year or so we have had reports from some of you as well as from other sources that short weight and low volume products were being encountered on the market. These reports have been of concern to us and we are attempting to develop further information for an overall evaluation of the problem and at the same time take whatever regulatory action is indicated as we discover violations.

Last fall, at the request of the Special Flour Committee established on the recommendation of the 43d National Conference on Weights and Measures, we conducted a nationwide survey of the net weight of packaged flour. We checked the weights of 94 different lots of flour in 68 separate mills. In most instances weighings were made at the time of packaging or within a day or so thereafter. We found 19 of the lots to be slightly short weight and one to be definitely so. It is a disturbing situation to find a staple food that lends itself to easily controlled packaging practices with this very unsatisfactory picture.

Following the flour survey we issued instructions to our field offices to conduct similar surveys on more than 30 other categories of packaged foods. These surveys are in progress at the present time. One district has completed its survey with the following results:

Three to six lots were examined in each of 35 different food products, each lot within a group being from a different packer, for a total of 206 lots. Thirty-nine lots, or 19 percent, were short weight. Twenty-five of the shortages fell in the

range of 0.01 to 0.99 percent; seven in the range of 1 to 1.99 percent; three in the range of 2 to 2.99 percent; and four (all in ground spices) in the range of 3 to 9.33 percent.

Five of the six lots of coffee were short weight, four of these in the less than 1 percent range. One firm's 1-pound pack showed an average of 15.87 oz. net weight (0.8 percent short) with every one of the 50 packages weighed being short. The difference between maximum and minimum net weights was 0.15 oz. This indicates excellent weight control by the firm, but on the wrong side of declared weight.

Seven of the eighteen lots of cereal flours, meals, or mixes were short weight. Four of the six lots of ground spices were short and exhibited the largest shortages found.

Over the past year we have seized some 19 consignments of a variety of foods on charges of short weight or low volume. The shortages have ranged as high as 27 percent on a lot of frozen shrimp and 21 percent on black pepper. Other items found violative were tea, coffee, macaroni products, olives, vegetable oil, peanut butter, corn chips, flour, pimentos, pies, and candy.

It is our intention to follow up all of these surveys and to take appropriate action wherever indicated. It will be our purpose to keep you informed of developments.

We will also welcome any additional information that you can give us when you encounter what appear to be violative shipments in interstate commerce. Let me urge that you bring these matters to our attention promptly as you encounter them, not waiting until the time of the Annual Conference or of some scheduled meeting of area officials. You may advise us at our headquarters here in Washington or at any one of our 17 district headquarters. In addition, we have resident inspectors permanently located in many cities where we do not have district headquarters. We invite each of you to become better acquainted with the members of our staff operating in your vicinity. If you do not have their addresses, we will be most happy to supply them to you. Because you and we, who are concerned with this area of consumer protection are so few, and the tasks that confront us are obviously of some magnitude it is essential that we work together closely if we are to achieve worthwhile results. We assure you that we stand ready to work with you to the full extent of our facilities that can be devoted to this area of enforcement.

DISCUSSION OF FOREGOING PAPER

MR. HARVEY: In addition to the prepared remarks, I should like to comment on a matter of which I have become aware since this meeting started—that is, of the very considerable concern on the part of many State and local food and drug and weights and measures enforcement officials over the principle or doctrine of preemption that applies with respect to certain Federal laws and regulations in the fields of laws of the various States. Under the general doctrine of preemption, the Federal laws are controlling if the laws of the States are at variance from them.

I understand that this concern over the preemption doctrine and its application to your duties as weights and measures officials arises because of the fact that under existing Federal law and regulations, and with particular reference to flour, variations are allowed for unavoidable shrinkage arising because of loss of moisture that occurs after the product is introduced into interstate commerce. Obvi-

ously, this may result in packages containing a lesser quantity of flour than was the case at the time that they were packaged, and there is created the difficulty of an accurate ascertaining of just how much flour was put in the package in the beginning.

Of course, this phenomenon of moisture loss due to change in atmospheric conditions is a characteristic of all foods, of all substance, as a matter of fact, which contain water as a component, and most all foods do. I think we must recognize that a majority of our food-stuffs are susceptible of changes in weight due to changes in moisture content unless they are hermetically sealed.

We are not unaware of the problem presented—I might say the old, old problem presented—by this natural phenomenon. We are aware, I think, of the inherent difficulties that would arise if an undertaking were made to change the law so that it required all moisture-bearing foods to be hermetically sealed. I think we would have difficulty with many things, for example sacks of potatoes. That perhaps is not the logical solution to the difficulty.

What the difficulties would be if a requirement were to impose upon the manufacturer of the package the burden of putting an additional quantity of his foodstuff in his package beyond that that he declared, in order to allow for shrinkage and thus inevitably have a legal package at any time thereafter, are unknown to us. What the effect would be of allowing the manufacturer to put in a little more water, in order that the moisture could evaporate and still leave the quantity declared on the label, and what advantage that would be to the consumer, I also cannot speculate upon. I think it is a matter of speculation as to the absolute advantage to the consumer to pay a greater price to insure full weight, including the water, when the difference may well be evaporation as in the case of flour, when in most of the instances that I have any knowledge of the first thing that the consumer does with flour when he buys it is to add water.

I say none of these things in derision to the problem. I say them in enumeration of the complexities and difficulties of this simple yet age-old problem of dealing with characteristics of weight changing incident to moisture changes.

We really do have a problem here. I can only say that we are studying the matter quite thoroughly and from every angle. I do not know at this time on what basis, equitable and legal, the rules or the regulations could be changed. Indeed I do not know that they can be changed. I do have a full appreciation of what the problem is, and I realize that in many instances the present situation defies effective enforcement. What the consumer thinks about it, we do not know, and his opinion is important.

We are conscious of the problem, and we recognize that it is a mutual problem. We will be glad to let you hear from us later as to what we may conclude, and we will be glad to entertain your suggestions at all times on this and on any other problems that we share.

MR. R. E. MEEK: Mr. Harvey, as the chairman of the now discharged Special Flour Committee, I was very sincerely interested in your remarks. I was particularly intrigued by your expression that we are all working together for the consumer's protection, because that indicated to me that you had in mind the weights and measures officials and the food and drug officials of this country working closely together in this important phase of government.

It strikes me that you have rather well demonstrated some of the concern of the Special Flour Committee when you mentioned that some 30 or more surveys of food products conducted by the Food and Drug Administration indicated a very high percentage of shortages. All these I am assuming were either at the time of introduction into interstate commerce or prior thereto. So I think that emphasizes why the Special Flour Committee of the Conference was very deeply concerned with this problem and why we made the specific recommendations.

I have attended many weights and measures meetings, not only of the National Conference, but pretty much throughout the United States. I have known many food and drug officials, Federal and State, and I heard them on various occasions indicate they did not believe that the Federal Food and Drug Law preempts the field insofar as quantity is concerned. I wonder if you would care to make an expression on that at this time. Do you feel that the States do have jurisdiction over this matter of shortages in our jurisdiction after a commodity has been introduced into intrastate commerce?

MR. HARVEY: It is my opinion from examination of the cases decided on the question of preemption that the weight provisions of the Food, Drug, and Cosmetic Act applicable to interstate shipments would preempt any State law that is at variance with the Federal statute or in conflict therewith. That is an opinion in law and not an expression of philosophy on my part.

MR. MEEK: Is it not a fact that food and drug officials depend to a considerable extent on weights and measures officials to assure accuracy of net content statements on prepackaged commodities?

MR. HARVEY: I am quite sure that it is a teamwork operation, yes, sir.

MR. MEEK: If that is true, do you not believe that it is the responsibility of the Federal Food and Drug Administration to consider very carefully the recommendations made in the report of the Special Flour Committee to the effect that every consideration be given to changing the regulations adopted under the Act in order to give us, the weights and measures officials of the States, counties, and cities, the opportunity to give you our maximum cooperation to assure the public—those who have a right to believe in the soundness of a declaration of net content on a package—the protection that we think the law intended they should have?

MR. HARVEY: I will go further than that, Mr. Meek. It is the obligation of the Food and Drug Administration to consider any serious recommendation of any responsible group on any question that bears on the public interest. I certainly agree with you that the problems in this area are mutual problems and that whatever views, recommendations, and facts the Weights and Measures Conference has should be considered thoroughly by the Food and Drug Administration.

That is not, as you indicated, a commitment as to what we will do, nor is it an answer as to our ability under the law to adopt the recommendations of this Conference. But I certainly agree that it is our duty to listen, to consider all of the recommendations that we receive from your group—I would say particularly from your group—in this area.

I would comment at the same time that the Food and Drug Administration, in spite of the awesome amount of power that is sometimes attributed to it, is itself a creature of law, and the rule-making authority that we possess is strictly within the framework of the statute itself. However, I may feel personally, whatever my own philosophy may be, that any participation in rule making that I may give in my official capacity is bound by the confines of the law. I get a great many worthwhile recommendations from groups that cannot be placed in effect because of the limitations of the law.

Let me remind you that, in dealing with the problem of the regulation of the net weight of foods where moisture changes create the problem, that which is applicable to flour must also be applicable to other commodities, including butter and cheese and anything else that you want to name. I mention that because some of the suggestions that are received are to center the variations around a uniform moisture content, something of that kind. I think it is to be remembered that that might work with some commodities. It might not work with others. That kind of approach presents a vast program of standardization. I do not know, for example, quite what the moisture standard would be for a candy bar, but candy bars are substances that contain moisture and lose it.

MR. MEEK: May I assure you then that our request was a most sincere one and that this National Conference on Weights and Measures is a well-established and responsible organization and represents the weights and measures officials of the United States.

MR. TURNBULL: Mr. Harvey, what in your opinion is the point at which you lose control of an interstate shipment, and where does intrastate or local control of that commodity begin?

MR. HARVEY: The intent of the Federal Food, Drug, and Cosmetic Act is to extend the Federal jurisdiction over a product that enters into interstate commerce so long as the product is identifiable as the product that entered interstate commerce. Obviously, if it should become so commingled with an intrastate product as not to be identifiable at all, then jurisdiction could not be proven. So long as it can be established that it is an article of interstate commerce, it comes within that authority granted by the Constitution to the Federal Government to regulate the commerce among the several States.

MR. LEWIS: You mention the reports that are made to you of short-weight packages and say this information is used to evaluate the situation as a whole. I am wondering if there is any possibility that the information which is thus developed, particularly concerning brands that may be consistent violators, might be made available to the various State jurisdictions so that we might be alerted.

MR. HARVEY: I think it is entirely possible that we can alert officials in particular cases. Certainly when we establish as a matter of evidence that violations have been committed and those are adjudicated, that information is always published. You have reference to something prior to that state of development of the case. Certainly we will include that among the matters that we shall be giving thought to as to how we can best work together.

MR. LEVY: Mr. Harvey, I listened with a great deal of interest and profit to your remarks on food where there is a moisture loss. Let us reverse the subject. In many important foods on the market today in cans—canned chicken and canned vegetables, for example—the net

content includes the necessary added water. In the instance of canned chicken which is marked $3\frac{1}{2}$ pounds net weight chicken and broth, where by test the chicken weighs $1\frac{1}{4}$ pounds, and of green beans marked 13 ounces, where the drained weight is 8 ounces, do you believe that the labels are true reflections of quantity or informative enough to the consumer who buys on the information on the label?

MR. HARVEY: That is the real question. If it is an amount of packing medium that is beyond what is reasonable in the preparation of the product, then it becomes ordinary adulteration by the substitution of water for something else.

I have to divide the subject, because beans are subject directly to the Food, Drug, and Cosmetic Act, whereas chicken is subject to the Poultry Products Inspection Act of the Department of Agriculture as well as to the Food, Drug, and Cosmetic Act. Both of the problems are to be met primarily by standards of identity for the particular commodities. Otherwise you have a very difficult situation in the prosecution of cases where you go into court and assert that the proportion between the water and the other ingredients is improper. If you are going to proceed effectively about that kind of thing—of too much packing medium—you first must establish by some public authority a standard to plead against. Then when the amount of water exceeds that provided for in the standard, the violation is clear.

REPORT OF COMMITTEE ON LAWS AND REGULATIONS

Presented by G. L. JOHNSON,* *Director, Division of Weights and Measures, Department of Agriculture, State of Kentucky*

The Conference Committee on Laws and Regulations, having previously distributed a tentative report and having held open hearings on items included therein, now submits for the consideration and action of this National Conference, its final report.

1. *Peat and Peat Moss*.—A firm recommendation was offered by the committee to the Conference a year ago, but was voted down by the Conference. After an additional year of study, the committee makes the same recommendation with an added parenthetical note.

Peat and peat moss shall be offered for sale or sold by volumetric measurement, in which case the volume shall be stated in cubic yards, cubic feet, or cubic inches, or by net weight, in which case the quantity shall be stated in avoirdupois pounds and ounces. (*Note.* Certain States may prohibit, by statute or regulation, the sale of commodities by any system of dry measure. In such States peat and peat moss shall be sold by net weight.)

(On motion and second from the floor, the words "peat and" were inserted in the title and in the body of the committee recommendation before the words "peat moss" by voice vote.)

2. *Method of Sale of Fluid Dairy Products—Units*.—Through the years there seems to have developed an increase in the sale of units of milk between the pint and half-pint sizes—units such as 10 fluid ounces, $\frac{1}{3}$ quart, and 12 fluid ounces. Such units usually are sold for consumption on the premises where sold. The committee recommended last year that the Conference amend the Model Law to provide for the sale of fluid dairy products in the 12-ounce unit (exactly half-way between the pint and half-pint). The Conference voted

*The Committee Chairman, Mr. F. M. Greene, became ill during the Conference and was unable to remain at the Conference.

down this proposal. The committee believes it unrealistic for State officials to vote at the National Conference to prohibit something and then to go back to their respective jurisdictions and allow it. A letter has been received by many weights and measures officials, including the members of this committee, from the Glass Container Manufacturers Institute, Inc., that pointed out certain inequities that have been created in jurisdictions that have allowed the use of odd size paper containers for fluid dairy products and disallowed the use of the same size glass containers. The basic purpose of the National Conference on Weights and Measures is uniformity. Uniformity—interstate and intrastate. Such laws, regulations, or enforcement interpretations as are referred to above are not, in the opinion of the committee, uniform.

Because of further representations from the glass bottle industry and from weights and measures officials, the committee recommends that Section 34 of the revised Model State Law on Weights and Measures be amended to provide for the unit 10 fluid ounces.

(Item 2 was adopted by voice vote.)

3. *Aerosol Bomb-Type Containers*.—Several officials have raised the point as to the proper method of quantity declaration for liquids and semisolids sold in aerosol bomb-type dispensers. The committee has observed that most such containers are labeled as to net weight, even though they dispense commodities such as paint, oil, insecticides, and the like, that normally are sold by liquid measure. The committee has no recommendation to make at this time, but suggests that the Conference solicit the technical assistance of the National Bureau of Standards and the several national organizations representing manufacturers of such commodities, to the end that meaningful statements of quantity may be arrived at and reasonable methods of checking such statements may be developed.

(Item 3 was adopted by voice vote.)

4. *Meats, Poultry, Fish, and Cheese in Plastic Wrappings and Casings*.—The 37th National Conference in 1952 adopted a recommendation of the then standing Committee on Methods of Sale of Commodities to the effect that "Meats, poultry, fish, and cheese in plastic wrappings and casings shall be exempt from net quantity declarations at packing sources and shall be sold on the basis of actual net weight at time of sale, provided that each item of meat or poultry so wrapped or contained shall be plainly and conspicuously marked with the legend: 'To Be Weighed at Time of Sale,' and, where the weight of the wrapping or casing exceeds $\frac{1}{8}$ ounce, the tare weight shall be plainly and conspicuously marked for deduction to determine the net weight."

The committee has looked into this matter seriously and is of the opinion that the action of the 37th Conference is contrary to the Federal Food and Drug Law, most State food and drug statutes, and many State and local weights and measures laws. The committee is of the further opinion that such laws are reasonable and that they can be complied with.

Accordingly, the committee recommends that the action of the 37th National Conference hereinbefore quoted be rescinded.

(Item 4 was adopted by voice vote.)

5. *The Word "Net" in Declarations of Quantity on Packaged Commodities.*—The committee has had brought to its attention that at least two States are requiring that the word "net" be included as a part of the quantity declaration on packages; thus a statement "Contents 12 ounces avoird." and "Contents 1 pint fluid" would be deemed unsatisfactory and would be required to be replaced with "Net weight 12 ounces avoird." or "12 ounces avoird. net" and "Net contents 1 pint fluid". Canners, label manufacturers, packagers, and carton manufacturers have estimated that alteration of markings on the thousands of packages not now including the word "net" in the quantity statement would run into hundreds of thousands of dollars, and they question the benefit to the consumer. Uniformity of legal requirements is one of the prime aims of the National Conference on Weights and Measures and is accepted by the committee as its principal charge.

The committee is unanimous in its opinion that the word "net" serves no real purpose in quantity statements of packages. Through the years, weights and measures officials have been building public confidence in quantity statements on packages. It is felt that consumers generally *feel* that all declarations of quantity are in terms of net quantity. Although the use of the word "net" is not discouraged, the committee urges that all States pursue the traditional role and accept such statements as are required in The Model Law and Model Regulation for Package Marking Requirements and not require a supplemental "net" in quantity declarations on packages. Such is the direction toward the desired uniformity.

(Item 5 was adopted by a standing vote of 37 to 22.)

6. *The Model State Law on Weights and Measures.*—The last revision of the Model State Law on Weights and Measures was adopted by the 36th National Conference in 1951. Since that time much legislative and court experience has been gained. With the assistance of the Office of Weights and Measures of the National Bureau of Standards, the committee includes as a part of its report a complete revision of the Model Law.

[A completely revised version of the Model State Law on Weights and Measures was presented by the committee; after an amendment from the floor relating to the sale and delivery of liquid fuels, the recommendation of the committee was adopted by a voice vote. Copies of the Model Law are available without charge from the Office of Weights and Measures, National Bureau of Standards, Washington, D.C.]

[During the presentation of the Model Law, considerable discussion about the section on presumptive evidence and the section on method of sale of commodities took place. Major participants in these discussions were Mr. Sanders, Mr. Straw, Mr. F. F. Thompson, and the acting chairman of the committee. The recommendations of the committee prevailed.]

(Item 6 as amended was adopted by voice vote.)

7. *Model Package Regulation.*—With the adoption by the Conference of the revised Model Law, the committee recommends that the Conference request the Office of Weights and Measures of the National Bureau of Standards to study the Model Regulation for Package Marking Requirements and bring to the Conference through this committee a revision of that document, said revisions to be in conformance with the revised Model Law. The committee recommends further that the Office of Weights and Measures negotiate with the Federal Food and Drug Administration toward the modernization of

the quantity regulations issued under the Federal Food, Drug, and Cosmetic Act.

(Item 7 was adopted by voice vote.)

F. M. Greene, *Chairman*
G. L. Johnson
J. T. Kennedy
E. L. Randall
Robert Williams
W. S. Bussey, *Secretary*

(On motion of Mr. Johnson, acting committee chairman, seconded from the floor, the report of the Committee on Laws and Regulations as amended was adopted by voice vote.)

REPORT OF THE COMMITTEE ON RESOLUTIONS

Presented by H. E. CRAWFORD, *Chairman, Inspector of Weights and Measures, Jacksonville, Florida*

WEIGHTS AND MEASURES STANDARDS FOR NEW STATES

Whereas, the action of the National Bureau of Standards in presenting, in a formal ceremony, standards of length, mass, and capacity to the newly admitted State of Alaska has been noted with much satisfaction by the membership of the National Conference on Weights and Measures; and

Whereas, it is believed that action such as this has an important bearing on the establishment of weights and measures controls in the recipient State and on uniformity in weights and measures standards and administration among all of the States: Therefore be it

Resolved, That this 44th National Conference on Weights and Measures recommend to the National Bureau of Standards that, after Statehood for Hawaii becomes an accomplished fact, the Bureau present to the new State of Hawaii standards of length, mass, and capacity that may be adopted as the reference standards of that State; and be it further

Resolved, That this Conference request the National Bureau of Standards to schedule the formal ceremony of presentation of the Hawaiian standards during a meeting of the National Conference, to permit members of the Conference to attend and participate in that ceremony.

INTERNATIONAL YARD AND POUND

Whereas, the Director of the National Bureau of Standards has informed the Conference of the recently announced agreement among the directors of the national standardizing laboratories of the English-speaking countries of the world with respect to an international yard and international pound: Therefore be it

Resolved, That this 44th National Conference on Weights and Measures express its approbation of that agreement; and be it further

Resolved, That this Conference express the earnest hope that the Congress of the United States, under its constitutional power to fix the standard of weights and measures of the United States, will, after consultation with the Director, National Bureau of Standards, fix by statute these and other national standards of weights and measures.

Whereas, the enthusiasm and support brought to bear on the celebration of National Weights and Measures Week in 1959 by weights and measures officers, equipment manufacturers, and commercial business interests have demonstrated the widespread interest in this means of educating the public in the principles of weights and measures supervision; and

Whereas, it is believed that a National Weights and Measures Week will become a factor of increasing value and importance in raising the efficiency level and in realizing the objectives of State and local programs of weights and measures administration: Therefore be it

Resolved, That this 44th National Conference on Weights and Measures record its recommendation that a National Weights and Measures Week be celebrated each year hereafter; and be it further

Resolved, That the Committee on Education of the National Conference be given the continuing assignment of promoting an annual National Weights and Measures Week.

NATIONAL BUREAU OF STANDARDS HANDBOOK 67

Whereas, there is now available in National Bureau of Standards Handbook 67, entitled "Checking Prepackaged Commodities," a detailed guide for weights and measures procedures in this area: Therefore be it

Resolved, That this 44th National Conference on Weights and Measures adopt NBS Handbook 67 as the official manual of the Conference for the checking of prepackaged commodities, and recommend its use to all weights and measures officials.

Resolutions of appreciation were adopted as follows:

1. To Honorable Lewis L. Strauss, Secretary of Commerce, for his interest in the National Conference, his constructive contribution to its meeting, and his sympathetic understanding of the problems and objectives of the weights and measures officer.

2. To the personnel of the Beltsville Experimental Station of the U.S. Department of Agriculture, who made possible a visit to the Station and supplied interesting and constructive information to the members of the delegation regarding the activities carried on at Beltsville.

3. To governing agencies for their cooperation in facilitating attendance at the Conference.

4. To business and industry for cooperating with the Conference, for attending and participating in its activities, and for hospitality extended.

5. To program speakers.

6. To the Director and staff of the National Bureau of Standards for the assistance in planning and administering the program and other details of the meeting.

7. To recently retired officials.

(On motion of the committee chairman, seconded from the floor, the report of the Committee on Resolutions was adopted by voice vote.)

[The committee chairman noted that two resolutions were submitted to the Committee on Resolutions by the Connecticut Sealers Association, one of which suggested that "National Weights and Measures Week" be changed to "Consumers' Protection Week" and the other of which suggested that the Conference endorse the legislative action of the State of Connecticut that established a Consumer Protection Department. The committee recommended no action on these resolutions. Subsequent to the adoption of the report of the Committee on Resolutions, there was a considerable amount of discussion by Mr. Albanese, Mr. Grassi, and Mr. Marcotte of Connecticut, and others regarding the terms

"Weights and Measures" and "Consumers' Protection." On motion of Mr. Crawford, and seconded by Mr. Grassi, the resolutions of the Connecticut Sealers Association were referred for further study to the Conference Committee on Education to be reported on at the 45th National Conference. This motion was adopted by voice vote.]

BREAKFAST MEETING OF THE INCOMING EXECUTIVE COMMITTEE OF THE CONFERENCE, FRIDAY, JUNE 12, 1959

On Friday morning, June 12, the newly elected Executive Committee, the chairmen of the standing committees, and the weights and measures members of the Advisory Committee met to study and reach decisions regarding the 45th Conference. Present at the meeting were 8 of the 9 officers, 8 of the 10 members of the Executive Committee, the chairmen of the 3 standing committees, and the chairman and 2 weights and measures representatives of the Advisory Committee. The meeting was presided over by the newly elected Conference Chairman, Mr. H. E. Crawford, City of Jacksonville, Fla. The following decisions were reached regarding the 45th National Conference on Weights and Measures, 1960:

1. *Place:* Sheraton-Park Hotel, Washington, D.C.
2. *Date:* June 6-10, 1960.
3. *Duration:* Open committee meetings on Monday (also Monday evening and Tuesday morning if deemed necessary by the Secretary); opening session Tuesday morning or Tuesday afternoon, depending on duration of committee meetings; Wednesday afternoon free of any scheduled business session; business sessions Thursday and Friday according to program plans.
4. *Registration fee:* \$10.
5. *Entertainment:* Left to the discretion of the Secretary.

SIXTH SESSION—MORNING OF FRIDAY, JUNE 12, 1959

(C. M. FULLER, CHAIRMAN, PRESIDING)

OPEN FORUM—WEIGHTS AND MEASURES ADMINISTRATION

COORDINATION OF STATE, COUNTY, AND CITY ACTIVITIES

By W. I. THOMPSON, *County Superintendent of Weights and Measures, Monmouth County, New Jersey*

When Mr. Bussey honored me a few weeks ago with this opportunity to talk to you on the subject of the correlation of the activities and efforts of the weights and measures endeavors in State jurisdictions in which there are State, county, and municipal weights and measures agencies, I am certain that I was designated to present this topic because I am from New Jersey, a State that operates with such a system.

New Jersey operates under what is known as the Form 2 Weights and Measures Law. I am certain that authorities could point out many advantages, as well as disadvantages, in this method of enforcement, which dates back many, many years in New Jersey. I feel that a few moments devoted to a brief résumé of some facts discovered by research on this topic will be of assistance in explaining just how New Jersey arrived at its present mode of operation. It is entirely possible that many of the men from this State will be as surprised as I was to learn some of the facts.

In the first place, New Jersey is what is known as a "Common Law State." This simply means that our basic laws were lifted from those of England and that our "temporary" constitutional provisions accepted the Common Laws of England as our *modus operandi* for such a period of time as they are not replaced, altered, or repealed by a specific act passed by the legislature of the State. Truthfully, most of our laws are direct derivations in principle from the *Magna Carta*, and even in that document we find references of a sort to weights and measures. Of course, these are basic in concept and were of such a type as to provide uniformity of methods of dealing among trades peoples. Fair trade practices actually became one of the first of civil rights guarantees.

New Jersey in the early days was an important seaport State. Among our larger ports were Perth Amboy, Elizabethtown, and Bridgetown. It was at these main ports that most application of the existing tables of weights was evidenced, at a time when purchasers compared the measurements of merchandise received against the measurements used in the trade and shipping practices of the world. Actually, only one basic standard of weight existed, but, with poor means of transportation, lack of facilities, and lack of enforcement policies, you can imagine the wide variations that possibly existed between the standard and its actual values in use.

When Congress received the authority to coin metal into money, it also received the power to establish acceptable standards of weights and measurements, and in 1836 a joint resolution by Congress provided for the furnishing of certain standards of measurement to the various States then in the Union. In 1846, New Jersey established a State Office of Weights and Measures and provided that this office should accept the standards offered by the Federal Government and

place them for safekeeping in either the State House or an institution of higher learning. This action taken by the State insured the merchants of a means of comparison by use of proper and accurate standards.

We find that this State enacted laws for weights and measures operations as early as 1844 and revised them in 1846. In 1872 the legislature of the State repealed all previous laws relating to this subject, established new laws governing the sale of some commodities, and accepted other standards for certain trade practices. In that year the legislature also established the position of State Superintendent of the Department of Weights and Measures, and appropriated the then fabulous salary of \$2,500 per year to pay the gentleman.

The State Superintendent's tasks included the setting up of uniform methods for the comparison of standards used within the confines of the State, as well as with those used in world trade. It is quite evident that his position was one of importance, as shown by the large salary in comparison with the smaller salaries paid to others. In 1875 further provisions were added to the laws and some deletions were made. It seems that this process has been taking place continuously from that time to the very present as far as weights and measures laws are concerned, with changes being made to solve new problems and to correct errors.

The State Superintendent of the Department of Weights and Measures, as established in the acts of 1872, stipulated that the clerk of each county in the State should be the recognized weights and measures official of his county. He also declared that each merchant would have to submit his weights and his measures that were used in trade to the clerk for the purpose of comparison. While there can be no quarrel with this ruling, unfortunately it was never too practical and not the least successful in its operation. Poor transportation and the sometimes great distances from the county seat prevented many merchants from doing as required, and there were many others, self employed, who simply refused to take the loss of a day's work in order to comply. Part of the failure of the function of this requirement was due to a lack of any provision for punishment for a failure to follow the rules.

Thus we find a gradual deterioration of the function of the office of the State Superintendent of Weights and Measures, and by 1880 it was commonly felt that the rules caused no particular inconvenience—they simply were ignored. Due to this ineffectiveness of the laws, it was suggested that the legislature stipulate that the clerks of the various counties be permitted to deputize their assistants and their clerks to assist in this program, and that these deputies be sent out into the field to seek out and test the various pieces of weighing equipment in use. Further, these men were to be given full authority to test these measures and to give approval to those found to be accurate. These methods and ideas were adopted by the legislature, and in 1881 the office of State Superintendent was abolished as an economy measure. A further impetus to the abolishment of this post was the release of a Federal survey which proved that even poor enforcement at the local level was far superior to the consistent failures of the State Departments to function properly.

In the meantime, in spite of the efforts made by a few of the county clerks to do a good job in this area, there apparently still was a grad-

ual deterioration in weights and measures activities throughout the State. Some cities like Paterson, N.J., had a weights and measures office provided for in the town charter, and they did fine work at the local level. Most of the clerks, however, still refused to have any part of the business and would not be bothered or inconvenienced with any of the details of enforcement. This attitude, coupled with a lack of laws to punish offenders, led to complaints against merchants being filed with the legal staff of the State. Subsequent investigation carried out along these lines proved terrific neglect in the following of the provisions of the act. Very little control over trade practices actually existed. In fact, a search of the State facilities failed to disclose the presence of the weights and measures accepted from the Congress that were supposed to be the State standards.

Late in the year 1872, arrangements were made with the Congress to get a duplicate set of standards, and these were received and deposited at Raritan Arsenal for safekeeping. Copies of these State standards were fabricated and were distributed to various counties of the State. (I am very proud to be able to report here that 9 of the original 10 dated 50-pound standard weights given to Monmouth County in 1872 are still in active use by this department.) During this same period, all local offices were made aware of the new provisions of section 9 of the weights and measures laws which set up new general methods and details of the enforcement provisions.

A continuing laxity on the part of the clerks in many counties to follow the provisions of the law prompted the legislature to enact new language in 1875 which made it mandatory on the part of the representatives of the county clerks' offices to present their standards of weights and measurements to the State Department for test and approval and then to go out into the field and perform their functions. For the next 30 years or so, this was the established policy, and the matter rested, many areas getting fine enforcement and others practically nothing.

In 1908 Mrs. Robert L. Stevens, widow of the founder of Stevens Institute of Technology, joined in a cooperative move with other women and financed an investigation of the retail trade practices in existence. This survey left little doubt that most buyers in New Jersey were being handsomely defrauded and that the retail practices were deplorable. Most every merchant followed the old adage, "Let the buyer beware." The survey pointed out, among other things, that many more incorrect weights were used in trade than were correct ones. Not all of the cases of incorrect weights were in the favor of the seller, but a great majority of them seemed to be. The survey served its purpose and provoked a legislative investigation which conclusively proved the survey to be correct.

President Woodrow Wilson, then Governor of the State of New Jersey, sparked the efforts of the legislature to make sound and just laws covering all phases of the weights and measures field. After a year of labor, in 1911 the legislature of New Jersey adopted the present laws of this State relating to weights and measures. Of course, amendments have been made and new laws have been added, but basically this State now operates under the laws made effective January 1, 1912.

The position of State Superintendent was again established in 1908, but he now had the backing of very complete and forceful laws gov-

erning sales methods and means of prosecuting violators. Provisions were established which set up the offices of Assistant State Superintendents and which authorized both county and municipal superintendents and their assistants. Procedures were adopted which gave the State Superintendent more authority than he previously enjoyed and also made that office responsible for the State Standards and for their accuracy and safekeeping. He was empowered to establish uniform containers for farm produce, to fix tolerances for commercial devices, and to make rules governing the sale of commodities. Many other powers were given to the State Superintendent at that time. While these powers were not all new, they were clearly and specifically spelled out in the law for the first time. The law listed not only the responsibilities of the Superintendent, but also those of each other group engaged in weights and measures enforcement. These new provisions restored the power and responsibility of the State Superintendent that were held previously from 1838 until 1881.

Today the State office in New Jersey bears the burden of responsibility for general supervision and administration of the weights and measures program of New Jersey, while the mechanical and other phases of enforcement are left mainly to the local or "on-the-spot" officials. The State Department provides men and some equipment to care for matters on the State level, and also provides the means of aiding the smaller local departments who find ownership of the needed equipment an economic impossibility. In the same way, topics or problems that arise widespread over the entire State are often referred to the local officials for handling, because it is felt that they enjoy a closer relationship with both the buyer and the seller on a daily basis. Because of this close relationship, some evidence is often produced that would not be available to an investigator from the State. The success of New Jersey's weights and measures operation lies in this very arrangement. It is at the local level that the pulse of the entire merchandising program is read, and the results of the reading are forwarded to the State for interpretation.

While each local department in New Jersey enjoys its own autonomous empire so long as it functions properly, the State Department must by law supersede the local authority whenever the need arises. Under warranted conditions the State could take over control and remain until proper local controls are reestablished. However, it is understood that such action will be taken only under conditions of emergency or gross neglect of duties. Generally speaking, the "live and let live" policy is followed with the closest cooperation so long as the job is done properly. But, as previously stated, the general administration of the State program is the responsibility of the State Department of Weights and Measures.

Since the establishment of these laws in 1911, a fine spirit of cooperation has existed between all levels of enforcement. Each department recognizes and respects the others and the parts that they play in the general picture. It is this feeling of working together to solve mutual problems and of working to a common end that makes this type plan successful. When the policies are sound, the individuals earnest and competent in their work, and a spirit of cooperation exists among all, a program will succeed. For proof, I point to the record of the State of New Jersey in the weights and measures field.

MR. DANIEL: Mr. Thompson, you mentioned that New Jersey operates under what is known as a "Form 2" weights and measures law. Could you tell us if there are other forms and, if so, how they differ from Form 2?

MR. THOMPSON: The other two forms are known as "Form 1" and "Form 3." I would like Mr. Bussey to describe the differences.

MR. BUSSEY: Form 1 of the Model Law provides for a State weights and measures organization that carries out all supervisory and enforcement programs within the State. Under this form no local weights and measures jurisdictions exist.

Form 2 is, as Mr. Thompson has described, the statute that provides for both State and local jurisdictions and for concurrent authority.

Under the Form 3 statute, the State acts only in a supervisory capacity and has no enforcement officials.

DR. GORDON: You made a point, Mr. Thompson, that supervision at the local level provides a closer contact with the general public and with the people who are being regulated. Do you think this closer relationship is really desirable?

MR. THOMPSON: Perhaps the best example is in the gathering of evidence for a case that is to be pursued in the court. It seems to me that the inspectors at the local level are more familiar with local problems and with local people and are better able to determine precisely where a fault actually lies. We have been very successful, for example, in obtaining full confessions from violators who might well be reluctant to speak to a State official not known by them on a personal basis.

MR. CRAWFORD: I should like to expand on that point. We certainly do not doubt the technical competence of the State enforcement officials; however, we do feel that, being very close to the business transactions in our community, we can act much faster to the benefit of both the sellers and buyers of commodities.

MR. A. T. SMITH: The viewpoint of the State office in New Jersey in this regard is that the Form 2 statute provides an excellent foundation for weights and measures regulation. We are able to be of assistance to the local officials not only in the preparation of cases for prosecution, but also in the many technical areas of weights and measures supervision.

SUPERVISION OF FOOD PACKAGE WEIGHTS IN WISCONSIN

By C. L. JACKSON, *Chief, Division of Economic Practices, Department of Agriculture, State of Wisconsin*

Nearly every weights and measures program administrator in the United States, whether he be county, city, or State employed, will tell you readily and honestly, if asked, that he is woefully short of funds. Very few dedicated, creative administrators will ever find the time, in a field as basic and as complex as weights and measures inspection, when his needs for funds are wholly met. Any serious student of government can verify the public interest value in stepping up weights and measures programs. But we as public administrators do not live in a purely idealistic world. We live in a reality of tremendous pressures for public funds.

The weights and measures administrator acknowledges this shortage of funds first of all because he wholeheartedly believes in what he is doing. From real results he understands the economic protection this work affords the public. He honestly believes that the small amount of investment which is currently being put into weights and measures administration is the most needed and the wisest of public expenditures. He admits to a shortage of funds also because this condition is not totally his responsibility. The full and final responsibility for allocating funds lies in a State legislature, a city council, or a county board. These bodies must collect this money and be fully accountable to the general public. So you see, the average weights and measures administrator can "pass the buck" as to the blame for the current shortage of funds for this work to a large extent.

But this same administrator can not "pass the buck" on the question of how efficiently and how effectively he uses the funds made available to him. This responsibility is primarily and almost entirely his. This responsibility has had those of us in Wisconsin who direct the weights and measures work concerned for some time. Frankly, I think we must admit that we have only a partial answer as to how best our job should be done today.

In the past decade we have seen a package evolution. It is reported that today the package and container industry has grown larger than the mighty automobile industry. Since this emergence of the package into the format of what we now call "modern merchandising," we can look back at our basic weights and measures inspection programs and see that we have failed to keep pace. In our case in Wisconsin, it has been a mad scramble to keep pace in the mechanical testing prescribed by statute. Only in the past few years, and particularly in the past year since we have employed a full time package specialist, have we been in a position to take a close and intelligent look at the package weight problem.

After months of study of food package problems, of our laws and regulations in this field, and of a development of package weighing procedures, we launched out on a statewide month-long survey of store packaged items just before "Weights and Measures Week," March 1-7. This survey was conducted in 318 stores in 114 cities. Twenty-eight city and State inspectors weighed 16,181 store-packaged fresh and smoked meats, poultry, and potatoes. A uniform procedure of weighing and of recording results was followed as recommended in the latest NBS publication, Handbook 67, Checking Prepackaged Commodities. The program was explained in full to all inspectors. Our package weighing specialist worked personally with most of the men to make certain that uniform procedures would be followed and that the results would be comparable.

In a news story released statewide following the survey, we pointed out that this survey was being conducted (1) to inform food retailers of legal weight requirements, (2) to determine the level of compliance, and (3) to gain experience for the development of a long-range commodity check-weighing program.

When the results of the survey had been summarized and evaluated, we found that on a package basis 44 percent of the fresh and smoked meat packages, 48 percent of the poultry, and 37 percent of the potatoes were found to be short weight. On a lot basis, 72.8 percent of

the lots of smoked meats, 76.6 percent of the lots of fresh meats and poultry, and 31.2 percent of the lots of potatoes were legally short weight in considering the average weight of the lot.

In analyzing the significance of this survey, several factors must be considered:

(1) *Shrink*: In most cases these packages were weighed within a few hours or at most a day after they were packaged. In weighing the packages, tare weight was determined by weighing dry containers so that any moisture in the wrapper was included in the net weight. We did not feel, therefore, that shrink would be a significant contributing factor to the shortages found.

(2) *Scale accuracy*: All prepackaging scales used were checked and were found to be accurate. Any small inaccuracies found were, in our judgment, not significant.

(3) *Tare weight*: Allowance for proper tare weight, on the other hand, was an important factor in the shortage in quite a number of stores. This failure to allow for tare weight has been shown in package-weight studies made by the city of West Allis and by other people over the past few years.

(4) *Weighing policies*: We must conclude that failure to have stringent weighing policies in operation in store packaging was an important contributing factor.

On 11,339 packages of fresh meats weighed, for example, 5,030 were correct, 6,309 packages weighing over or under. On a pure chance random basis, 3,155 packages should have been underweight and 3,155 overweight. Actually, there were 4,949 packages (43.6 percent) underweight and only 1,360 packages (12 percent) over the declared net weight.

As previously mentioned, this work was carried on primarily as an informational survey. Corrections were made in all cases where the lots were short weight, but no prosecutions were recommended. Prior to this survey, six cases had been prosecuted for short weight. Many conferences have been held with store executives. Our package-weighing specialist worked with technical personnel of many food retailers. Management of retail markets went all out to correct the situation. Attitudes toward and respect for our inspectors improved. We received many requests from food packers to work with them in their package weighing problems and to help them meet the new demands on package weight made by retail organizations.

A further analysis was made of 4,636 packages of fresh meats and poultry. We compared the total of the sale prices of these packages with the computed package price based on the correct weight of the package multiplied by the price per pound. The sale price of these packages was \$5,286.41; the computed total value of the packages was \$5,227.08. This represented a difference of slightly over 1 percent. This meant that consumers purchasing these packages were obtaining 1 percent less than they thought they were purchasing. This 1 percent difference was due partly to weight and partly to pricing computations and policies.

We believe the full significance of this difference could be verified and amplified in any careful statistical analysis. It would show the economic importance of seemingly small errors on package weight and price computation in terms of dollars and cents to consumers. It

would show the impact of these differences as a matter of competition. For these reasons we in Wisconsin are led to the conclusion that an expanded package-weighing program of the right type is the right direction to turn in improving the efficiency and effectiveness of weights and measures funds in Wisconsin.

DISCUSSION OF FOREGOING PAPER

MR. CRAWFORD: Mr. Jackson, do you feel, as many of us are beginning to feel, that the checking of prepackaged commodities is of at least equal importance to the mechanical operations of a weights and measures activity?

MR. JACKSON: We very definitely are of that opinion. I believe furthermore that, if we do a really comprehensive job in package control at the city, State, regional, and national levels, we will, to a considerable extent, be providing an almost automatic check on weighing and measuring devices.

MR. SLOUGH: Your idea of employing a packaging specialist intrigues me. At approximately what level would such an individual work?

MR. JACKSON: We have had an individual specializing in package control principally in the area of field operations. As we now see it, we need a very high level individual headquartered in the State office. His responsibilities will include the development of a year-around program of package and commodity control and a continuing study of packaging problems, including working with the business and industrial firms that have problems in this area. He also will conduct special investigations, analyze reports, and prepare publications for the trade.

MR. ALBANESE: Could you describe briefly how your inspectors decide what packages in a food store are to be checked and how many of each?

MR. JACKSON: We operate on what we consider to be both statistically sound and logical principles. We attempt to sample the many different types of packages in a market and then sample each of the lots selected.

MR. TRUE: I should like to call the attention of the delegates to this Conference to the fact that the checking of price computations on packages is of equal importance to the checking of weight or measure. We have found instances of packers indicating less weight on a label than the package actually contained, but indicating a total price that was more than the labeled weight times the price per pound.

MR. JACKSON: I agree with Mr. True, but I suggest that weights and measures officials discuss with their legal counsel the fine points of their laws in this regard. In some jurisdictions it may properly be determined to be short weight, while in others it may be simply perpetration of fraud.

MR. CICHOWICZ: In the checkweighing of frozen poultry and other frozen items, is it proper to compare the weight indicated on the label with the weight of the frozen article, or should the article be thawed prior to weighing?

MR. G. P. SMITH: We have found many instances where frozen poultry contained an abnormal amount of ice. In such cases it seems proper to me to weigh the poultry after it has thawed.

MR. J. H. LEWIS: We have been studying this matter in the State of Washington for some time. We have checkweighed turkeys, for example, immediately after their preparation for freezing, after the freezing operation, after the normal storage period, and again after the poultry has thawed. Poultry definitely does absorb certain amounts of water in what is called the "blooming" process, and this is necessary in the preparation of the birds for the market. In one instance we carefully weighed 20 turkeys with an average weight of 21 pounds and found that in the normal blooming process the average increase in weight was 12 ounces. We are continuing to study this matter and feel that it will be possible to arrive at a satisfactory solution.

DR. GORDON: What has been done in Wisconsin is very significant and I hope will be repeated before this year is over in many other States. One reason for the significance is that, as far as I am aware, it is the first statewide survey in which use has been made of the new package control procedure published in NBS Handbook 67. This, from the standpoint of those of us who need to make comparisons, is very important.

I would like to suggest that during the coming year as many State and local jurisdictions as can possibly do so should plan and conduct surveys based on the procedures as outlined in Handbook 67 and then prepare the data resulting from such surveys for release to the public during National Weights and Measures Week.

SCALES UNDER EXPANDED PACKERS AND STOCKYARDS JURISDICTION

By D. L. BOWMAN, *Chief, Packers and Stockyards Branch, Livestock Division, Agricultural Marketing Service, U.S. Department of Agriculture*

It is a pleasure for me to be here today and meet with you gentlemen for the purpose of discussing the expansion of our jurisdiction over the livestock marketing industry, since the amendment to the Packers and Stockyards Act on September 2, 1958. Since you have been meeting all week and this is your last session I know you will want me to be brief. While you are principally interested in scales and weighing problems I would first like to discuss the recent amendment to the Packers and Stockyards Act and mention the other phases of our regulatory program. Prior to the amendment, only livestock markets meeting the following requirements were subject to the Act:

1. A public market operated for compensation.
2. Engaged in business in interstate commerce.
3. A used and useful area for handling livestock in excess of 20,000 square feet.

The amendment to the Act eliminated the area requirement, thereby causing all public livestock markets operated for compensation or profit and engaged in business in interstate commerce to be subject to the Act and regulations. The amendment also included all livestock dealers and market agencies or commission firms engaged in interstate commerce.

Briefly, the amendment extends our jurisdiction in the livestock marketing industry to cover all stockyards, market agencies, and dealers engaged in business in interstate commerce, and divides the

jurisdiction between the Federal Trade Commission and the Department of Agriculture with respect to meat packers. This division gives the Federal Trade Commission jurisdiction over retail sales, manufacture and merchandising by packers of nonmeat and non-poultry items.

As a result of the recent amendment, there are approximately 2,300 livestock markets subject to the Act as compared to approximately 600 markets which were posted prior to the amendment. We are presently engaged in a stepped-up posting program to post all markets meeting the requirements and as of July 1, we will have approximately 1,100 markets posted. It is obvious that as a result of the recent amendment to the Act, the number of livestock and packer scales subject to our requirements will be increased quite considerably.

I would like to tell you briefly something about the Packers and Stockyards Act, and the Branch of the Livestock Division which is responsible for its enforcement.

The primary purpose of the Act is to assure that livestock producers will receive the true market value for their product. The Act was passed in 1921, after lengthy investigations had revealed that major packers maintained monopolistic control over operations at large terminal stockyards. These investigations disclosed that yardage charges, commission rates, and feed costs at such markets were, in many instances, unreasonably high and were being applied on a discriminatory basis; that facilities and services being furnished at many markets were inadequate, and that consignors were not receiving complete and accurate accounting from their selling agents. Stockyard companies, commission firms, dealers and packers operating at the markets, were engaged in practices detrimental to the interests of livestock producers. Prior to the passage of the Act, few States had legislation that provided for any form of regulation of public livestock markets.

The Act provides, in substance, that the facilities and services furnished to producers who ship livestock to public markets, shall be *adequate*; and buying services, shall be *reasonable* and *nondiscriminatory*; that all consigned livestock shall be sold on the basis of its *merits* under conditions of *open competitive* bidding; that the weighing of such livestock shall be *accurate*; that *full* and *correct accountings* shall be furnished consignors and buyers for whom the commission firms act as selling or buying agents; and that the stockyard companies, market agencies, dealers, and packers subject to the Act, shall not engage in *unfair, deceptive, or discriminatory* practices. The Act also requires that market agencies and dealers operating at supervised markets, furnish bonds to assure performance of the financial obligations they incur. The *reparation provision* of the Act affords livestock producers and other patrons of public markets a more *expeditious* and *less expensive* method of prosecuting claims against stockyard companies, market agencies, and dealers than were the remedies previously available to them at common law or by statute.

To carry out the provisions of the Act, the Packers and Stockyards Branch now maintains district offices at major livestock markets throughout the United States. Working from these offices, Branch personnel exercise general supervision over the operations of numerous commission firms, dealers, and packers engaged in buying and

selling at terminal stockyards and livestock auction markets which are subject to the Act.

This supervision includes the investigation of numerous *unfair trade practice complaints*, including *short weights*; the registration and bonding of market agencies, including auction markets and dealers subject to the Act; the establishment of rates charged by stockyard companies and commission firms and the supervision of the test and inspection of scales at posted livestock markets and dealer and packer buying stations.

In summation, it may be said that the Packers and Stockyards Act is a "Fair Trade Act" to regulate the purchase and sale of livestock as it passes through the terminal stockyards and posted livestock auction markets. The Act also extends to all meat packers in interstate commerce and as amended would also cover country transactions of meat packers and livestock dealers.

The portion of the Act and regulations which is of most interest to you is that pertaining to livestock scales and weighing practices which is actually one of the most important sections of the Act.

Regulations 201.71 through 201.78 deal entirely with scales and weighing. The basic requirements being that all livestock and live poultry scales subject to supervision under the Act shall be installed, maintained, and operated in such a manner as to insure accurate weights. Further, it is required that the scale owners shall cause their scales to be tested properly by competent testing agencies at least twice a year and a copy of the test report filed with this Branch. In addition to these basic requirements, the Act makes it a felony for anyone to make or cause to be made false scale tickets in the purchase or sale of livestock. It is our belief that only through the proper selection, installation, and maintenance of those scale facilities, best adapted to the particular need, can dependable weighing results be obtained. In order that accuracy may be assured, the scale owner must see that his scales are tested at regular intervals and that the weighing is done by competent persons who fully understand their responsibilities and discharge them accordingly.

In order that these objectives may be accomplished the Branch attempts to promote a three-fold program.

1. To see that the scales are tested in accordance with the regulations.

2. To inform the weighmasters through instructions as to the proper weighing practices and as to their responsibilities.

3. To conduct investigations to determine if false weight practices exist.

The Scale Testing Program has been operating for a number of years and, in most instances quite efficiently, due in part, to the cooperation which we receive from a number of State weights and measures officials. No doubt many of you will now receive a number of requests to test livestock scales from scale owners who were formerly not subject to our supervision. It is realized that this will place an additional burden on you, and that you are faced with appropriation problems, with which we are familiar. We do feel, however, that in many States this may aid you in acquiring the equipment and personnel needed to perform the service. Many State livestock auction associations would support such a program.

You will be interested to know that Mr. R. D. Thompson, who heads our Scale Section, and who is known to many of you, has recently revised our Scale Test Report Form in such a manner that the Inspection Report, LS-213 (pink sheet) formerly used has been eliminated and LS-212 (green sheet) has been simplified. We have also obtained permission to have this form reproduced bearing the name of the State agency doing the testing, in those instances where this is desired by the State. Mr. Thompson will contact you individually on this matter.

Many of you are familiar with the official instructions for weighing livestock which are furnished to all livestock weighers subject to the Packers and Stockyards supervision. In addition to this, an abbreviated instruction listing 12 important points in short concise sentences is being posted at all livestock scales which are subject. By this manner we hope to fully inform the weighers and the general public as to proper weighing practices. The testing of scales and the instruction of the weighers as steps Nos. 1 and 2 are basic to the program.

Now we turn to the matter of investigation of weighing practices. In the latter part of the past decade the Department realized that in the enforcement of the Act more scientific methods must be employed to detect false weighing, and has successfully used these methods in a number of investigations in recent years. We intend to continue using all devices which may be developed by scale technologists, which are practical, and which may be used to detect false weighing. We have learned that in order to prepare a case which will stand up in court that much time, effort and forethought must go into its preparation. The very nature of the industry and the commodity makes successful prosecution of false weight cases difficult, but it can be done if sufficient interest and effort are expended. From Bible times down to the present day, civilization has been plagued with individuals who cheat at the scale. Frequently Government authorities and the general public have failed to realize the extent to which these practices exist. An old statute in the Illinois Code deals with this problem and states that anyone who shall be convicted of false weighing in the buying or selling of livestock shall be fined a specified amount and thereafter deemed to be a "common cheat." We believe that in view of the importance of accurate weights to the livestock industry that the Department of Agriculture and both State and local weights and measures officials should expend an extra effort to see that a better enforcement program is initiated and followed consistently. If in our enforcement of the Act we encounter violations which do not come under our jurisdiction, we expect to refer them to the proper State authorities and will assist them in the prosecution of such cases. In turn, we will be glad to have you report violations to us, which we will investigate thoroughly.

In closing, I wish to again express my appreciation for the opportunity to meet with you and thank you personally for your past cooperation and solicit an even closer working relationship in the future. All of us have a job to do. Let's do it together.

REPORT OF THE TREASURER

Presented by C. C. MORGAN, *Treasurer, City Sealer of Weights and Measures, Gary, Indiana*

Balance on hand June 1, 1958_____		\$2, 744. 20
RECEIPTS :		
Registration fees—1958 Conference, 364 at \$5_____	\$1, 820. 00	
Interest accrued_____	76. 15	
	<hr/>	
Subtotal_____	\$1, 896. 15	
		<hr/> 1, 896. 15
Total_____		\$4, 640. 35
DISBURSEMENTS :		
Expenses of 43d National Conference		
Conference party :		
Sheraton Hall, reception and dance, sandwiches, sodas, punch, and waiters_____	\$658. 15	
Music, Jack Morton Productions_____	125. 00	
Ladies' entertainment :		
Fashion show and tea_____	150. 00	
Embassy tour and tea_____	100. 00	
Bus transportation, embassy tour_____	84. 00	
Executive Committee breakfast_____	69. 60	
Bus transportation of delegates for tours of the Federal Food and Drug Laboratories and the National Bureau of Standards_____	74. 00	
Other Conference expenses :		
Rubber stamp, Gary Office Equipment Co_____	6. 35	
Receipt books, Robert James Co_____	12. 66	
Contribution toward expenses of Dr. W. Muhe, Braunschweig, Germany_____	50. 00	
Miscellaneous hotel and Conference expenses____	241. 76	
Expenses of Conference subsequent to June 9, 1958 :		
National Weights and Measures Week :		
Emblem artwork and cut_____	50. 00	
3,000 mats_____	91. 80	
1,000 mats_____	30. 60	
Honor award certificates_____	14. 80	
Conference stationery, George W. Allen Co_____	37. 81	
Travel expense of Special Flour Committee mem- bers_____	740. 16	
Bank charges_____	4. 80	
	<hr/>	
Subtotal_____	\$2, 541. 49	
		<hr/> 2, 541. 49
Total balance on hand June 1, 1959_____		\$2, 098. 86

DEPOSITORY :

Gary Trust and Savings Bank, Gary, Indiana
First Federal Savings and Loan Association, Gary, Indiana

(Signed) C. C. MORGAN,
Treasurer

(On motion and second from the floor, the report of the Treasurer was adopted
by voice vote.)

REPORT OF AUDITING COMMITTEE

Presented by PAUL DEVRIES, *Chairman, Municipal Superintendent of Weights and Measures, Passaic, New Jersey*

As of June 12 the Auditing Committee examined the financial records of the Conference and found the same to be in order and correct in every detail.

PAUL DEVRIES, *Chairman*

H. H. HOUSTON

F. F. THOMPSON

(On motion of the Conference Chairman, seconded from the floor, the report of the Auditing Committee was adopted by voice vote.)

MR. JACKSON: Mr. Chairman, I move that the Conference authorize the Treasurer to pay the costs of the Conference incurred during this meeting and until the Treasurer's report is submitted at the next National Conference.

(This motion was seconded and adopted by voice vote.)

(The benediction was delivered by the newly elected Conference Chaplain, Mr. Ralph Magoffin. Thereupon at 11:27 a.m. the 44th National Conference was adjourned *sine die*.)

PERSONS ATTENDING THE CONFERENCE

Delegates—State, City, and County Officials

ALASKA

State----- R. A. FINDLAY, Inspector, Division of Weights and Measures, Department of State Police, Box 2719, Juneau.

ARIZONA

State----- J. J. O'DONNELL, Deputy State Inspector, Department of Weights and Measures, 103 State Office Building, Phoenix.

CALIFORNIA

State----- J. E. BRENTON, Chief, Bureau of Weights and Measures, Department of Agriculture, 1220 N St., Sacramento.

County :

Alameda----- W. A. KERLIN, County Sealer of Weights and Measures, 333 Fifth St., Oakland.

Kern----- A. D. ROSE, County Sealer of Weights and Measures, 1116 East California Ave., Bakersfield.

Los Angeles----- C. M. FULLER, County Sealer of Weights and Measures, 3200 North Main St., Los Angeles.

San Diego----- H. J. McDADE, County Sealer of Weights and Measures, 1480 F St., San Diego.

COLORADO

State----- H. N. DUFF, Supervisor, Weights and Measures Section, Department of Agriculture, 3130 Zuni St., Denver.

H. H. HOUSTON, Director, Oil Inspection Department, 1024 Speer Blvd., Denver.

CONNECTICUT

State----- F. M. GREENE, Chief, Division of Weights and Measures, Food and Drug Commission, State Office Building, Hartford.

County :

Fairfield----- W. E. SHEEHY, County Sealer of Weights and Measures, County Court House, Bridgeport.

Hartford----- R. J. MARCOTTE, County Sealer of Weights and Measures, County Building, 95 Washington St., Hartford.

V. J. ARGENTO, Assistant Sealer.

H. J. ROJESKI, Assistant Sealer.

City :

Hartford----- NATHAN KALECHMAN, City Sealer of Weights and Measures, Municipal Building.

Middletown----- PETER GRASSI, City Sealer of Weights and Measures, Post Office Box 223.

New Britain----- A. J. ALBANESE, City Sealer of Weights and Measures, Room 327 Municipal Building.

DISTRICT OF COLUMBIA

Weights, Measures, and Markets Branch, Department of Licenses and Inspection, Room 227 Esso Bldg., 261 Constitution Ave. NW., Washington, D.C.

District----- J. T. KENNEDY, Chief.

J. M. BOUCHER, Supervisor.

J. T. BENNICK, Inspector and Investigator.

W. R. CORNELIUS, Inspector and Investigator.

F. C. HARBOUR, Inspector and Investigator.

KENNETH HAYDEN, Inspector and Investigator.

H. P. HUTCHINSON, Inspector and Investigator.

W. H. JENNINGS, Inspector and Investigator.

G. P. KOSMOS, Inspector and Investigator.

T. B. MIDDLETON, Inspector and Investigator.

I. L. WAGNER, JR., Inspector and Investigator.

W. W. WELLS, Inspector and Investigator.

FLORIDA

State----- NALLS BERRYMAN, Director, Weights and Measures Division, Department of Agriculture, Room 107 Nathan Mayo Bldg., Tallahassee.

City:

Jacksonville----- H. E. CRAWFORD, Inspector of Weights and Measures, 431 W. Eighth St.

Miami----- H. E. HOWARD, Supervisor, Division of Trade Standards, Coconut Grove Station, Post Office Box 708.

GEORGIA

State----- P. I. MORRIS, JR., Director, Weights and Measures Division, Department of Agriculture, 19 Hunter St. SW., Atlanta.

J. W. D. HARVEY, State Oil Chemist, State Oil Laboratory, Department of Revenue, 264 Capitol Pl., Atlanta.

ILLINOIS

City:

Chicago----- I. M. LEVY, City Sealer of Weights and Measures, Room 302 Central Office Building, 320 North Clark St.

R. J. FAHY, Chief Deputy.

INDIANA

State----- R. E. MEEK, Director, Division of Weights and Measures, State Board of Health, 1330 W. Michigan St., Indianapolis.

W. C. BOYD, State Inspector.

County:

Gibson----- W. R. SEVIER, County Inspector of Weights and Measures, County Jail, Princeton.

LaPorte----- J. F. GITTINGS, County Inspector of Weights and Measures, Court House, LaPorte.

St. Joseph----- S. C. GRZESKOWIAK, County Inspector of Weights and Measures, Room 14 Court House, South Bend.

Vigo----- R. J. SILCOCK, County Inspector of Weights and Measures, Room 5 Court House, Terre Haute.

City:

Fort Wayne----- J. A. HILGEMANN, City Inspector of Weights and Measures, 301 South Clinton St.

Gary----- C. C. MORGAN, City Sealer of Weights and Measures, Room 204 City Hall.

New Albany----- M. A. STEINERT, City Inspector of Weights and Measures, 37 West Fifth St.

South Bend----- B. S. CICHOWICZ, City Inspector of Weights and Measures, City Hall.

Terre Haute----- J. T. HARPER, City Inspector of Weights and Measures, Room 205 City Hall.

KANSAS

State----- J. F. TRUE, State Sealer, Division of Weights and Measures, State Board of Agriculture, State Office Bldg., Topeka.

J. L. O'NEILL, State Inspector of Weights and Measures, Williamsburg.

KENTUCKY

State----- B. J. BUTLER, Commissioner, State Department of Agriculture, Frankfort.

G. L. JOHNSON, Director, Division of Weights and Measures, Capitol Annex.

City:

Louisville----- W. H. ISING, Supervisor, Division of Weights and Measures, City Hall.

LOUISIANA

State----- A. J. MAYER, Director, Division of Weights and Measures, State Department of Agriculture and Immigration, Capitol Station, Post Office Box 4292, Baton Rouge.
 F. F. THOMPSON, Chief Chemist, Petroleum Products Tax Division, Department of Revenue, University Station, Post Office Box 8374.

MAINE

State----- H. D. ROBINSON, Deputy State Sealer of Weights and Measures, Department of Agriculture, Capitol Building, Augusta.
 City : Portland----- C. J. WILS, JR., City Sealer of Weights and Measures, Room 16, 389 Congress St.

MARYLAND

State----- J. E. MAHONEY, State Superintendent of Weights and Measures, Department of Markets, State Board of Agriculture, University of Maryland—Room 247 Symons Hall, College Park.
 R. N. SMITH, Assistant Superintendent.
 J. D. MAHER, State Inspector, Midland.
 County :
 Montgomery----- E. W. BUCKLIN, Director, Department of Inspections and Licenses, County Office Bldg., Rockville.
 S. W. PARRISH, Chief, Division of Zoning, Permits, and Licenses.
 L. B. MORTON, County Inspector of Weights and Measures.
 J. P. SOLTYSIAH, County Inspector of Weights and Measures.
 Prince George's-- R. J. CORD, Chief Inspector, Department of Weights and Measures, Court House, Upper Marlboro.
 City : Baltimore----- G. H. LEITHAUSEE, Chief Inspector, Division of Weights and Measures, Room 1106 Municipal Bldg.

MASSACHUSETTS

State----- W. C. HUGHES, Chief Administrative Assistant, Division of Standards and Necessaries of Life, Department of Labor and Industries, State House, Boston.
 City :
 Boston----- J. F. MCCARTHY, City Sealer of Weights and Measures, Room 105 City Hall Annex.
 Brockton----- J. F. COYNE, City Sealer of Weights and Measures, City Hall.
 Brookline----- N. A. SACKNOFF, Deputy Sealer of Weights and Measures, Town Hall.
 Cambridge----- A. T. ANDERSON, City Sealer of Weights and Measures, Municipal Bldg.
 Everett----- L. L. ELLIOTT, City Sealer of Weights and Measures, City Hall.
 Fitchburg----- W. T. DELOGE, City Sealer of Weights and Measures, City Hall.
 Newton----- J. E. BOWEN, City Sealer of Weights and Measures, City Hall, 1000 Commonwealth Ave., Newton Centre.
 Salem----- B. A. KOTULAK, City Sealer of Weights and Measures, City Hall.
 Somerville----- J. F. CASEY, City Sealer of Weights and Measures, Public Works Bldg.

MICHIGAN

State----- J. L. LITTLEFIELD, Chief, Foods and Standards Division, State Department of Agriculture, Room 607 Lewis Cass Bldg., Lansing.
 C. O. COTTON, Supervisor, Weights and Measures.
 L. K. RICE, State Inspector, Post Office Box 43, St. Johns.
 County : Washtenaw-- G. P. SMITH, County Sealer of Weights and Measures, County Bldg., Ann Arbor.

City :

Dearborn----- J. A. HUGHES, Superintendent, Department of Licenses, Weights, and Measures, 13030 Hemlock Ave.
 Detroit----- J. T. DANIELL, Deputy Sealer, Bureau of Weights and Measures, 740 Elmwood Ave.
 Highland Park-- J. F. BAKER, City Sealer of Weights and Measures, Police Department.
 Lansing----- W. M. SAXTON, City Sealer of Weights and Measures, 333 North Cedar St.

MINNESOTA

State----- ERLING HANSEN, Supervisor, Department of Weights and Measures, Railroad and Warehouse Commission, One Flour Exchange, Minneapolis.
 H. F. KIEKOW, State Inspector, Mora.
 City : Minneapolis---- J. G. GUSTAFSON, Chief Inspector, Department of Licenses, Weights, and Measures, Room 101A Court House.

MISSISSIPPI

State----- W. G. SELLERS, State Inspector of Weights and Measures, Route 1, Laurel.

MISSOURI

State----- G. W. BAY, Chief Inspector, Weights and Measures Division, Department of Agriculture, Jefferson City.
 E. H. McADAMS, State Inspector, 917 South Fourth St., Moberly.

NEVADA

State----- RAYMOND REBUFFO, Assistant Director, Division of Plant Industry, State Department of Agriculture, Post Office Box 1209, Reno.
 E. L. RANDALL, Chief Chemist.

NEW HAMPSHIRE

State----- A. H. DITTRICH, Chief Inspector, Bureau of Weights and Measures, Division of Markets and Standards, Department of Agriculture, State Office Bldg., Concord.
 FREDERICK YOUNG, State Inspector.

NEW JERSEY

State----- W. L. BOYAN, Deputy Attorney General, Department of Law and Public Safety, Room 210 State House Annex, Trenton.
 W. H. CRAMER, State Superintendent, Division of Weights and Measures, 187 W. Hanover St., Trenton.
 S. H. CHRISTIE, JR., Deputy State Superintendent.
 R. K. BODENWEISER, Assistant Superintendent.
 A. T. SMITH, Assistant Superintendent.
 J. R. BIRD, Senior Inspector.
 E. N. COLGAN, State Inspector.

County :

Atlantic----- J. E. MYERS, County Superintendent of Weights and Measures, 350 South Egg Harbor Rd., Hammonton.
 Bergen----- M. J. SANTIMAURO, County Superintendent of Weights and Measures, 66 Zabriskie St., Hackensack.
 E. E. DAWSON, Assistant Superintendent.
 Burlington----- P. F. NUNN, County Superintendent of Weights and Measures, County Office Bldg., 49 Water St., Mount Holly.
 D. F. HUMMEL, Assistant County Superintendent.
 Cumberland----- ALFRED LIRIO, County Superintendent of Weights and Measures, Post Office Box 369, Vineland.
 G. S. FRANKS, Assistant County Superintendent, Court House, Bridgeton.

Essex-----	W. H. SCHNEIDEWIND, County Superintendent of Weights and Measures, 278 New St., Newark.
Gloucester-----	R. J. MORRIS, County Superintendent of Weights and Measures, Court House, Post Office Box 377, Woodbury.
Mercer-----	R. M. BODENWEISER, County Superintendent of Weights and Measures, Court House, Trenton.
Monmouth-----	W. I. THOMPSON, County Superintendent of Weights and Measures, Post Office Box 74, Allenhurst. J. A. J. BOVIE, Assistant County Superintendent, 82 West Wall St., Neptune City.
Passaic-----	WILLIAM MILLER, County Superintendent of Weights and Measures, County Service Bldg., Pennsylvania Ave., Paterson.
Union-----	J. M. DIETZ, County Superintendent of Weights and Measures, Court House, Elizabeth.
Warren-----	G. E. CONNOLLY, County Superintendent of Weights and Measures, Court House, Belvidere.
City :	
Bayonne-----	J. G. VAYDA, Municipal Superintendent of Weights and Measures, Municipal Bldg., 26th St. and Avenue C.
Englewood-----	LEONARD DERIENZO, Municipal Superintendent of Weights and Measures, City Hall.
Fair Lawn-----	OSCAR HAUG, Municipal Superintendent of Weights and Measures, Plaza Bldg.
Garfield-----	CHARLES BENANTI, Municipal Superintendent of Weights and Measures, Police Bldg., 101 Somerset St.
Jersey City-----	H. J. MYERS, Municipal Superintendent of Weights and Measures, City Hall.
Linden-----	L. T. REAGAN, Municipal Superintendent of Weights and Measures, Room 206, City Hall.
Passaic-----	PAUL DEVRIES, Municipal Superintendent of Weights and Measures, City Hall.
Paterson-----	J. P. LEONARD, Municipal Superintendent of Weights and Measures, 115 Van Houten St. W. J. KEHOE, Assistant Municipal Superintendent.
Trenton-----	R. J. BONEY, Municipal Superintendent of Weights and Measures, 485 Hamilton Ave.
Union City-----	A. O. OSLUND, Municipal Superintendent of Weights and Measures, City Hall, 3715 Palisade Ave.

NEW MEXICO

State-----	DALLAS RIERSON, Director, Department of Agriculture, University Park.
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NEW YORK

State-----	J. H. Stone, Assistant Commissioner, State Department of Agriculture and Markets, State Office Bldg., Albany. J. F. MADDEN, Director, Bureau of Weights and Measures. J. F. TUCKER, State Inspector, 24 Cornish Ave., Binghamton.
County :	
Allegany-----	GEORGE DERX, County Sealer of Weights and Measures, 130 Olean St., Angelica.
Monroe-----	E. D. HUBBLE, County Sealer of Weights and Measures, 1400 South Ave., Rochester. RICHARD VENESS, Deputy County Sealer.
Nassau-----	ROBERT WILLIAMS, County Sealer of Weights and Measures, Old County Court House Annex, Mineola. A. W. WEIDNER, JR., Assistant County Sealer.
Ontario-----	R. F. BENHAM, County Sealer of Weights and Measures, Court House, Canadaigua.
Steuben-----	W. F. CHAPELLE, County Sealer of Weights and Measures, R.D. No. 1, Rathbone.
Wayne-----	H. H. WRIGHT, County Sealer of Weights and Measures, 30 Catherine St., Lyons.

City:

Binghamton-----	H. A. LASON, City Sealer of Weights and Measures, 60 Robinson St.
Ithaca-----	E. P. NEDROW, City Sealer of Weights and Measures, 318 Columbia St.
Lackawanna-----	J. J. SERES, City Sealer of Weights and Measures, 84 Rosary Ave.
Rochester-----	A. C. SAMENFINK, City Sealer of Weights and Measures, Rochester Public Markets.
White Plains-----	T. E. LATIMORE, City Sealer of Weights and Measures, Department of Public Safety, 279 Hamilton Ave.
Yonkers-----	JOHN DIMASE, City Sealer of Weights and Measures, City Hall.

NORTH CAROLINA

State-----	J. I. MOORE, Field Supervisor, Weights and Measures Division, Department of Agriculture, Room 415, Agriculture Bldg., Raleigh.
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NORTH DAKOTA

State-----	J. C. GOLL, Chief Inspector, Weights and Measures Department, Public Service Commission, Capitol Bldg., Bismarck.
	ALLEN OTTERMAN, State Inspector.

OHIO

State-----	V. D. CAMPBELL, Chief, Division of Weights and Measures, Department of Agriculture, Reynoldsburg.
County:	
Defiance-----	A. D. ELLIOTT, County Auditor and Sealer of Weights and Measures, Court House, Defiance.
Medina-----	R. W. SEARLES, Deputy County Sealer of Weights and Measures, County Board of Education Bldg., Medina.
Ottawa-----	RUDOLPH STARKLOFF, Deputy County Sealer of Weights and Measures, Post Office Box 208, Port Clinton.
Richland-----	C. E. KERR, Deputy County Sealer of Weights and Measures, c/o County Auditor, Mansfield.
City:	
Akron-----	R. K. SLOUGH, Superintendent, Weights and Measures, Municipal Bldg.
Cincinnati-----	W. E. G. RHEIN, Superintendent, Markets, Weights, and Measures, Department of Safety, Sixth Street Market House.
Springfield-----	WALTER HALL, City Sealer of Weights and Measures, City Hall.
Youngstown-----	F. B. JONES, City Sealer of Weights and Measures, City Hall.

OKLAHOMA

State-----	T. C. BECK, Assistant Director, Marketing Division, State Board of Agriculture, Room 122 State Capitol Bldg., Oklahoma City.
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PENNSYLVANIA

State-----	MISS GENEVIEVE BLATT, Secretary, Department of Internal Affairs, Capitol Bldg., Harrisburg.
	H. M. TURRELL, Director, Bureau of Standard Weights and Measures.
	J. A. GREEN, Assistant Director.
County:	
Centre-----	G. N. HAUPT, County Inspector of Weights and Measures, 148 N. Prospect Ave., State College.
Philadelphia-----	J. J. POWERS, Chief Supervisor, Bureau of Weights and Measures, Room 306 City Hall, Philadelphia.

City :

Altoona----- R. I. CUMMINGS, City Inspector of Weights and Measures,
City Hall.
Erie----- P. F. WATSON, City Sealer of Weights and Measures, City
Hall.

PUERTO RICO

Commonwealth----- A. E. DIAZ, Head, Division of Weights and Measures, Eco-
nomic Stabilization Administration, Post Office Box
4183, San Juan.

RHODE ISLAND

State----- E. R. FISHER, State Sealer of Weights and Measures, De-
partment of Labor, Veterans Memorial Building, 83
Park St., Providence.
City : Warwick----- B. F. TAYLOR, City Sealer of Weights and Measures, 35
Titus Lane.

SOUTH CAROLINA

State----- C. H. STENDER, Assistant to Commissioner, Department of
Agriculture, Post Office Box 1080, Columbia.
R. M. MAGOFFIN, Director, Bureau of Inspection.
E. E. RICHARDSON, State Inspector, 212 Elm Street, Con-
way.

TENNESSEE

City : Memphis----- V. D. ROGERS, City Inspector of Weights and Measures, 590
Washington Ave.

TEXAS

State----- RUSSELL KOONTZ, Chief, Division of Weights and Measures,
State Department of Agriculture, Capitol Station,
Austin.
City :
Dallas----- J. D. WALTON, Supervisor, Weights, Measures, and Mar-
kets, Room 303 City Hall.
Houston----- R. O. DEVILLIER, Chief, Weights and Measures Division,
Department of Public Works, City Hall.

UTAH

City : Salt Lake City- E. C. WESTWOOD, City Sealer of Weights and Measures, 118
East First, South.

VIRGINIA

State----- J. H. MEEK, Director, Division of Markets, Department of
Agriculture and Immigration, 1200 East Main St., Rich-
mond.
T. C. HARRIS, JR., Supervisor, Weights and Measures
Section.
J. A. ROSEN, Assistant Supervisor.
J. E. MICHAUX, State Inspector.
R. H. SHELTON, State Inspector.
City :
Alexandria----- C. B. TATE, City Sealer of Weights and Measures, 405
Cameron St.
Danville----- C. H. WRENN, City Sealer of Weights and Measures, Curb
Market Bldg., Spring St.
Norfolk----- W. F. BRADLEY, Chief, Bureau of Weights and Measures,
Department of Public Safety, City Hall.
Petersburg----- C. R. BRANCH, City Sealer of Weights and Measures, City
Hall.
Richmond----- M. L. RICE, Senior Inspector, Bureau of Weights and
Measures, The Mosque Bldg., Laurel and Main Streets.
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Chatillon, John, & Sons : G. C. REILEY, Vice President, Sales, 89 Cliff St., New York, N.Y.

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W. J. SCHIESER, Vice President, Product Development.

J. F. SULLIVAN, Chief Engineer.

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RICHARD WASNIAK, National Manager, Service, 600 South Michigan Ave., Chicago, Ill.

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Gilbert & Barker Manufacturing Co.: WILLIAM KEAY, Manager, Sales Service, West Springfield, Mass.

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Gurley, W. & L. E.: F. G. WILLIAMS, Washington Representative, 5514 Nevada Ave. NW., Washington, D.C.

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K. C. ALLEN, Vice President of Scale Operations, 448 Huffman Ave., Dayton, Ohio.

M. E. BONE, Weights and Measures Representative.

E. A. REUSSENZEHN, Chief Scale Engineer, Dayton Scale Division.

HODGSON, A. E., Scale Dealer, 46 Garrett Rd., Upper Darby, Pa.

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R. F. STRAW, Vice President, 385 Stewart St. SW., Atlanta, Ga.

M. J. KAUFFMAN, District Manager, 1910 West Atlantic St., Philadelphia, Pa.

C. E. ROESSLER, Director of Engineering, 2941 Scale Ave., Rutland, Vt.

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G. B. RICHARDS, North Chicago, Ill.

McIntyre, John J., Sons: F. L. McINTYRE, Owner, 514-16 Knorr St., Philadelphia, Pa.

Measuregraph Co.: F. L. WALL, Washington Representative, Apt. 202, 6603 Arlington Blvd., Falls Church, Va.

Miller, Byron & Associates: B. D. MILLER, Owner, 7712 Georgia Ave. NW., Washington, D.C.

Neptune Meter Company: E. F. WEHMANN, Chief Development Engineer, 22-42 Jackson Ave., Long Island City, N.Y.

Nicol Scales, Inc.: W. F. NICOL, President, 1315 South Akard St., Dallas, Tex.

Owens-Illinois Glass Co.: F. B. BUSCH, Engineer, Toledo, Ohio.

Penn Scale Manufacturing Co., Inc.: SYDNEY BLACK, President, 150 W. Berks St., Philadelphia, Pa.

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H. L. ZUPP, Field Engineer, 3525 Guilford Ave., NW., Canton, Ohio.

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Rockwell Manufacturing Co.: A. J. KOMICH, Product Manager, 400 No. Lexington Ave., Pittsburgh, Pa.

Sanitary Scale Co.: E. C. KARP, Vice President, Manufacturing and Engineering, 910 E. Lincoln Ave., Belvidere, Ill.

Sauter, August, of New York, Inc.:

H. G. SHIMP, JR., Manager, 866 Willis Ave., Albertson, Long Island, N.Y.

M. U. WIRZ, Salesman.

Seraphin Test Measure Co.: T. A. SERAPHIN, General Manager, 1314 N. Seventh St., Philadelphia, Pa.

Smith, A. O., Corp.: H. D. LEISENRING, General Sales Manager, Smith-Erie Division, 250 Park Ave., New York, N.Y.

Spinks Scale Co.: D. F. LAIRD, Manager, 836 Stewart Ave., SW., Atlanta, Ga.

Stewart-Warner Corp.: H. T. DINKELKAMP, Chief Engineer, Alemite Division, 1828 West Diversey Parkway, Chicago, Ill.

Streeter-Amet Co.: R. T. ISHAM, Vice President, Grayslake, Ill.

Symington Wayne Corp.:

C. F. BATEMAN, Vice President, College Ave., Salisbury, Md.

W. J. DUBSKY, Manager of Engineering.

W. O. HOWLAND, Service Manager.

F. W. LOVE, Engineering Department.

Thatcher Glass Manufacturing Company: A. C. THOMAS, Quality Control Representative, Grand Central Ave., Elmira, N.Y.

Tokheim Corporation: WILLIAM LOUTHAN, Manager, Field Service, 1600 Wabash Ave., Fort Wayne, Ind.

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American Petroleum Institute:

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P. W. ENGELS, Consultant, 50 W. 50th St., New York, N.Y.

American Seed Trade Association: D. L. JAMES, Washington Representative, 725 15th St., NW., Washington, D.C.

American Standards Association, Inc.: A. C. HUTTON, Washington Representative, 4721 Industrial Bldg., National Bureau of Standards, Washington, D.C.

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Atkins and Durbrow: J. O. FLETCHER, Sales Manager, Post Office Box 55, Port Colborne, Ontario, Canada.

Atlantic Refining Co.: M. G. DAVIS, Manager, Regional Marketing Department, 260 South Broad St., Philadelphia, Pa.

Consumers Union: D. W. MASTERS, Director, Mount Vernon, N.Y.

Continental Can Co., Inc.: T. P. MCGLYNN, Manager, Product and Market Development, 49 Oraton St., Post Office Box 1159, Newark, N.J.

Cooperative League of the U.S.A.: J. T. JENNINGS, Assistant Director, 1025 Vermont Ave., NW., Washington, D.C.

Cooperative News Service: W. K. MCCANDLESS, Association Editor, 825 Vermont Ave., Washington, D.C.

Dairy Industries Supply Association: D. H. WILLIAMS, Technical Director, 1145 19th St., NW., Washington, D.C.

Federal-State Publication: Miss A. O. NICOLL, Director and Owner, Rosslyn Station, Post Office Box 9833, Arlington, Va.

Fruit Dispatch Co.: R. B. TEWKSBURY, Assistant Traffic Manager, United Fruit Interchange Terminal, Weehauken, N.J.

Gasoline Pump Manufacturers Association: G. T. WRIGHT, Managing Director, 551 Fifth Ave., New York, N.Y.

General Foods Corporation: C. A. CLARK, Weights and Measures Coordinator, 250 North Street, White Plains, N.Y.

General Mills, Inc.: O. A. OUDAL, Director, Products Control, 9200 Wayzata Blvd., Minneapolis, Minn.

Glass Container Manufacturers Institute, Inc.: C. E. WAGNER, Development Engineer, 99 Park Ave., New York, N.Y.

Grain and Feed Dealers National Association: H. L. SHARP, Secretary-Treasurer, 725 15th St., NW., Washington, D.C.

Grand Union Co.: T. J. STREITHORST, Executive Vice President, 2060 West Virginia Ave., Washington, D.C.

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National Canners Association:

H. A. COX, 1133 20th St., NW., Washington, D.C.

H. L. STIER.

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Paper Cup and Container Institute, Inc.: R. W. FOSTER, Assistant to Executive Director, 250 Park Ave., New York, N.Y.

Paraffined Carton Association: H. H. ROBBINS, Executive Secretary, 111 West Washington St., Chicago, Ill.

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Potomac Coop. Federation:

R. R. PYNE, 7014 Braeburn Road, Bethesda, Md.

MISS DORIS RALL.

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Republic Steel Corp.: D. R. SMITH, Corporation Weighing Supervisor, 410 Oberlin Rd., SW., Massillon, Ohio.

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FRED LARSON, Project Engineer.
H. C. PACKARD, Secretary, Loss Control Committee.

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Suburban Propane Gas Corp.: W. S. BIGELOW, Assistant Secretary, Post Office Box 206, Whippany, N.J.

Sun Oil Co.: A. H. MARSH, Manager, Equipment and Station Maintenance, 1600 Walnut St., Philadelphia, Pa.

Swift and Co.: E. G. SPIKER, 711 14th St., NW., Washington, D.C.

Thread Institute, Inc.:
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W. D. SEIDLER, Member, Legislation Committee, Coats & Clark, Inc., 430 Park Ave., New York, N.Y.

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Visking Co., Division of Union Carbide Corp.:
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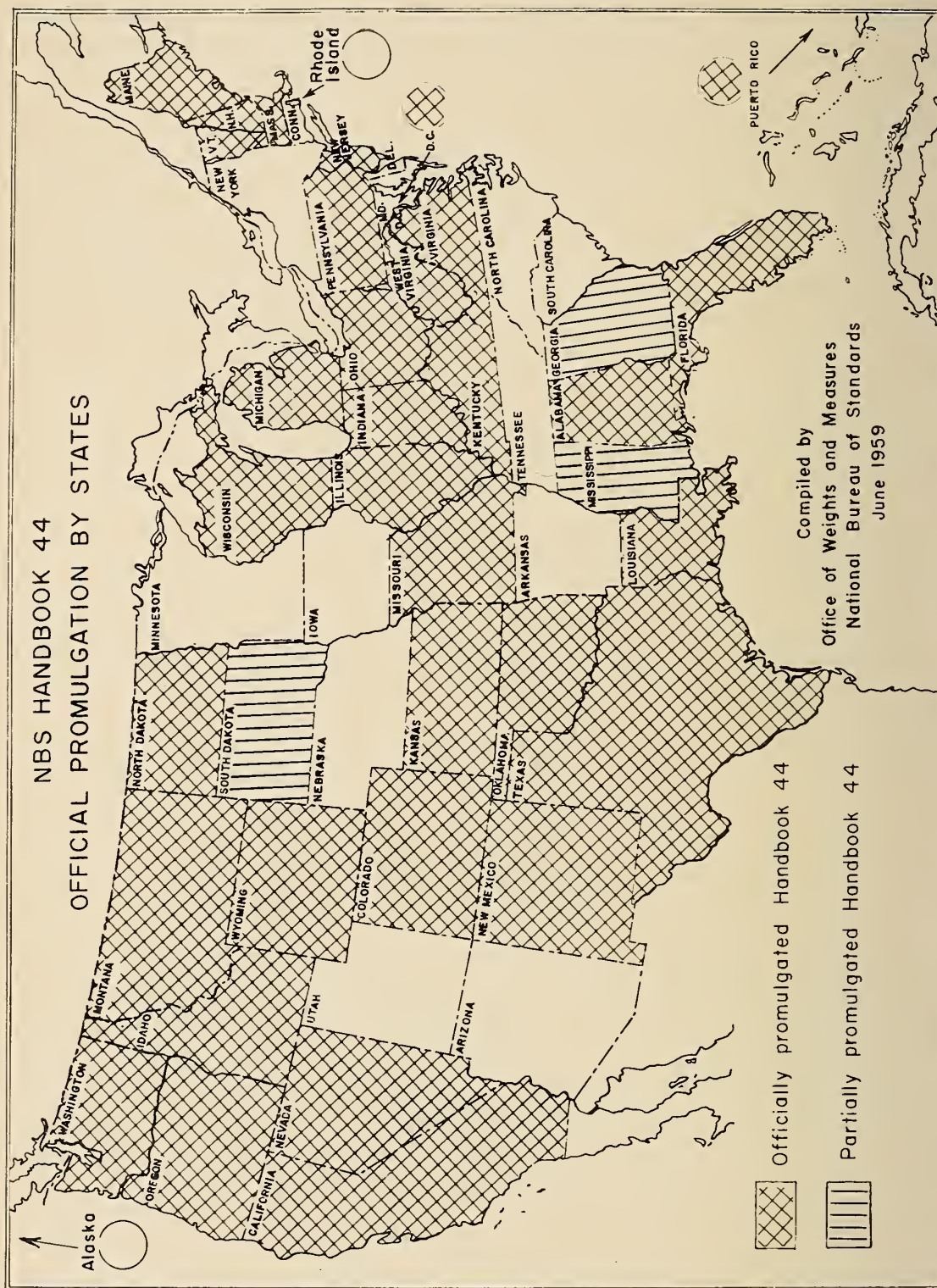


FIGURE 1. Official promulgation by States of National Conference specifications, tolerances, and regulations for commercial weighing and measuring devices as published in National Bureau of Standards Handbook 44—2d Edition.

THE NATIONAL BUREAU OF STANDARDS

The scope of activities of the National Bureau of Standards at its major laboratories in Washington, D.C., and Boulder, Colorado, is suggested in the following listing of the divisions and sections engaged in technical work. In general, each section carries out specialized research, development, and engineering in the field indicated by its title. A brief description of the activities, and of the resultant publications, appears on the inside of the front cover.

WASHINGTON, D.C.

Electricity and Electronics. Resistance and Reactance. Electron Devices. Electrical Instruments. Magnetic Measurements. Dielectrics. Engineering Electronics. Electronic Instrumentation. Electrochemistry.

Optics and Metrology. Photometry and Colorimetry. Optical Instruments. Photographic Technology. Length. Engineering Metrology.

Heat. Temperature Physics. Thermodynamics. Cryogenic Physics. Rheology. Molecular Kinetics. Free Radicals Research.

Atomic and Radiation Physics. Spectroscopy. Radiometry. Mass Spectrometry. Solid State Physics. Electron Physics. Atomic Physics. Neutron Physics. Radiation Theory. Radioactivity. X-ray. High Energy Radiation. Nucleonic Instrumentation. Radiological Equipment.

Chemistry. Organic Coatings. Surface Chemistry. Organic Chemistry. Analytical Chemistry. Inorganic Chemistry. Electrodeposition. Molecular Structure and Properties of Gases. Physical Chemistry. Thermochemistry. Spectrochemistry. Pure Substances.

Mechanics. Sound. Mechanical Instruments. Fluid Mechanics. Engineering Mechanics. Mass and Scale. Capacity, Density, and Fluid Meters. Combustion Controls.

Organic and Fibrous Materials. Rubber. Textiles. Paper. Leather. Testing and Specifications. Polymer Structure. Plastics. Dental Research.

Metallurgy. Thermal Metallurgy. Chemical Metallurgy. Mechanical Metallurgy. Corrosion. Metal Physics.

Mineral Products. Engineering Ceramics. Glass. Refractories. Enameled Metals. Constitution and Microstructure.

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Applied Mathematics. Numerical Analysis. Computation. Statistical Engineering. Mathematical Physics.

Data Processing Systems. SEAC Engineering Group. Components and Techniques. Digital Circuitry. Digital Systems. Analog Systems. Applications Engineering.

• Office of Basic Instrumentation.

• Office of Weights and Measures.

BOULDER, COLORADO

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Radio Propagation Physics. Upper Atmosphere Research. Ionosphere Research. Regular Prediction Services. Sun-Earth Relationships. VHF Research. Radio Warning Services. Airglow and Aurora. Radio Astronomy and Arctic Propagation.

Radio Propagation Engineering. Data Reduction Instrumentation. Radio Noise. Tropospheric Measurements. Tropospheric Analysis. Propagation-Terrain Effects. Radio-Meteorology. Lower Atmosphere Physics.

Radio Standards. High-Frequency Electrical Standards. Radio Broadcast Service. Radio and Microwave Materials. Electronic Calibration Center. Microwave Circuit Standards.

Radio Communication and Systems. Low Frequency and Very Low Frequency Research. High Frequency and Very High Frequency Research. Modulation Systems. Antenna Research. Navigation Systems. Systems Analysis. Field Operations.

